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The Independent Magazine

Alpha Syntauri

Music System

Fake Apples—

A Continuing

Languages

Rocky Writes

Plato from

Control Data

Buglettes

Adventurer's

December 1983 Vol. 1 No. 2 \$3*

Software Review C.Itoh 8510 Printer Utility Protect Your Program From Prying Hyes Apples in South Africa Dealer's Dilemma The Worm in the Apple Know your Apple

'the ultimate in affordable digital synthesizers'

alphaSyntauri

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Softside Vol 6 No 1

"The approach taken by Syntauri software is distinctive — its features set it apart from other systems".

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"The modular design with software flexibility makes it comparable to such digital synthesizers as the Synclavier II(tm) and the Fairlight CMI(tm). The system can grow — not be outgrown".

Byte December 1981

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The Australian Apple Review

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THE WORM IN THE APPLE

KNOW YOUR APPLE

TOP TEN

UTILITIES

APPLE COPY II PLUS

The most sophisticated Bit copy Program is now available in Australia! It handles synchronized tracks, half tracks, nibble counting, bit insertion and other protection schemes. It also includes a comprehensive discussion of disk format and protection techniques, and instructions on how to back up hundreds of popular programs, from Advanced Visicalc to Zork.

A disk system and speed check assure your drives are running in top condition and a nibble editor will allow you to repair.

BACK UP YOUR PROTECTED DISKS!

This is also the last DOS utility you will need. Fully Menu driven and includes a catalogue display with binary files, addresses and lengths, a disk usage map, and can copy, lock, unlock delete and undelete files. The copy II plus sector editor will allow you to view and modify data in either hex or ASCII format.

HANDLESBOTH DO\$ 3.2 and 3.3 \$59.95 THE SUPER PLOTTER \$79.95

A professionally oriented, extended graphics plotting system for the Apple II. Includes pie charts, bar charts, point and line graphs. Features include data file editor, graphics screen text editor, function blotter, overlay modes and much more. Comprehensive manual.

EDUCATIONAL

State of the art in computer assisted instruction programs. Kid tested and inexpensive. These programs are recently imported from the USA, and al make extensive use of the Apple's magnificent colour graphics and sound to make learning fun.

THE MATHS MACHINE — **\$79.95**Designed to improve maths skills, from kindergarten to grade 6. Handles class sizes up to 60 students, but is equally suitable in the home.

THE SPELLING MACHINE — **\$59.95** For improvement of spelling skills. Stores up to 700 words and sentences which are completely changeable by you the teacher.

THE READING MACHINE — **\$64.95** Gives reading instruction from kindergarten to 3rd grade. Over 28 skill levels and a comprehensive manual to guide parents and teachers.

SPELLING SORCERY — **\$44.95** Uses the power of arcade games to make spelling fun for all ages. Ability to input user selected words with edit facility. For schools and the home.

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RL are proud to announce the arrival of the following games of strategy from the good ole USA.

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PANDEMONIUM — \$39.95
A well executed solid thinking game. You must form words horizontally, vertically and diagonally on a 5 x 5 box grid. Includes 5000 word dictionary

VALDEZ \$29.95
Highly rated simulation of a supertanker using helm and engine controls. You have to contend with tides, icebergs and other ships.

RL COMPUTING SERVICES 33 NEY STREET MORANBAH 4744 QLD

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EDITORIAL

Thanks to everyone for your comments on our first issue. The only real complaint, a justified one, was that the magazine was a little on the thin side. Well, as they say, "Great orchards. from little appleseeds do grow" (or something like that). This issue is substantially weightier, and gives an indication of the direction we are headed. Keep the letters subscriptions!) rolling in.

There have been two months between the first issue and this. Owing to the Great Australian Summer Somnolence there will also be two months to the next, in February. We then plan to make the magazine a monthly.

The article in our first issue which received the most interest was our piece on "Fake Apples". It seems tempers run high on this question: one Apple dealer even refused to stock our magazine because he mistakenly thought that we recommended these temperamental little beasts. We welcome this controversy — there's nothing like a bit of heated debate to get your mind off the cricket. So as to clarify at least our own position, this is where we stand.

- 1. We abhor and strongly advise against cheap, poorly engineered and sloppily constructed Apple copies. Most of these machines are of Taiwanese origin and arrive in this country by way of Hong Kong or occasionally Singapore. Especially to the first-time user, the apparent cheapness of these machines is usually false economy, as they are mostly extremely unreliable.
- 2. We are sitting on the fence regarding the many Apple-compatible machines which are well-made, but which Apple claim violate their copyright. While we see Apple's point, we can only compare it to that of IBM, who welcome compatible machines as an expansion of their "territory". Our only complaint against these machines is their possible illegality, not their performance.
- 3. We believe that much of the problem has occurred because the Apple II, and now the //e, is overpriced. The best small computer in the world has been sold in such vast quantities that even the current reduced price seems hard to justify when compared to some of the newer machines on offer.

What is the answer? We don't know, but we feel we are doing the right thing



by fostering debate on the subject. It is certainly the case that there are a lot of users of these machines in Australia, all sorts of people who own their machines for all sorts of reasons. This magazine will cater for such people, as well as for the Apple mainstream.

Another item on everybody's lips is the new Apple, popularly known as the "Mackintosh". Apple are being as tightlipped as IBM recently were over their "PC Junior", but a few rumours are a little more substantiated than others. It seems that it will be portable, and 32 bit, and that ... Speculation! We don't want people going around saying "I read in the Apple Review that the Mackintosh (pick one of the above)". One thing is worth considering, though. IBM announced their PC Junior before it was ready so as to preempt buyers who may have been considering purchasing another machine. If Apple don't do the same thing, it leads you to think what you like. We'll know when it appears.

Apple Australia have also thrown things into a turmoil with their recent decision to cancel and renegotiate all their dealer agreements. We are assured that it's just a device to regularise the dealerships Apple inherited when they took over Australian distribution from Electronic Concepts six months ago. If there was no more to it than that, why do it at all? Privately many dealers are appalled with what they see as a counter-productive move on Apple's part. But at the time of writing it is too early to tell. Apple may emerge with a stronger and more effective dealership network, or the opposite.

Graeme Philipson

Love us? Hate us? Got something to say? Drop us a line, and tell the other readers as well. Short and interesting letters will be favoured over long and boring ones, and all published letters will be edited as little as possible.

Dear Sirs.

lenjoyed reading your magazine and found your information on word processing most helpful, particularly as was thinking of purchasing the Vision-80 128K card to work with Zardax. Information such as was given cannot readily be obtained from dealers.

There are many matters which you could cover, but if my comments are of any interest, I wonder if you will publish articles on interfacing between different devices and the Apple (as in your interesting review of the Olympia proewriter) and even between different computers. I am sure, for example, that many Apple owners also use the Tandy TRS 80 model 100, and would be interested in storing its memory contents in Zardax files, if that were possible. As for games, I do hope that way will give some more attention to the more sophisticated games such as wizardry as well as to arcade games.

Your magazine offers much interest and good value, and I wish you every success.

P.W. Nicholls Perth, WA.

Thanks for your comments.

Figarding the use of the Vision-128

M card with Zardax, see the information in the letter below. We will be using articles such as you describe, in brief, the real trick with interporter communication lies with serial matters and communications soften and computers are so the property of the serial serial transmitting text files between a comparatively simple method, the property of the serial seri

Dear Sir,

was most impressed by your first and look forward to more of the

As a long time user of Zardax, I must see you go to an awful lot of trouble moving large blocks of text. Rather than the cumbersome method you describe,

why not do the following?

- (1) Go to the beginning of block of text and mark with CTRL-X
- (2) Go to end of block and press CTRL-P (3) Give section a suitable name, hit RETURN
- (4) Go to place where text is to be inserted, hit CTRL-I, followed by the code of the temporary file just created.

This method is quick and allows multiple insertions of the same block of text. If you want to copy a block of text, as well as the above use CTRL-I etc to insert it at the original point as well as any other place in the text you wish to insert it.

The above works very quickly when using a pseudo-disk. The latest version (1.18) of the Zardax Utilities disk will allow the use of a Vision 128K or Saturn 128K ramcard as a pseudo-disk, thus allowing almost instant puts and inserts. It is also useful when printing multiple copies of a document which uses a large label file. If the label file is first transferred to the pseudo-disk, then printing is not slowed down by the continual need for disk accesses.

We use a Saturn 128K ramcard in slot

To use this as a pseudo-disk within Zardax the following steps should be followed:

- (1) Boot the Zardax Utilities disk.
- (2) Select the Disk Drivers Option.
- (3) Select the Vision 128K option for installation.
- (4) Boot Zardax and run SETUP.

This will install the disk driver into Zardax. From then on it is only necessary to boot Zardax and initialize the pseudo-disk as follows:

- (1) Boot and run Zardax.
- (2) Press Z510.
- (3) Press N*.

It is necessary to "initialize" the pseudo-disk because for some reason Zardax installs it in a "disk full" state.

I trust this information may prove to be of use.

Dr A.L. Barnett Adelaide S.A.

Ed. Quite right, too. Let this be a lesson to everyone, especially me. I have been

using Zardax for years, and have never bothered to read the manual properly. I have therefore not followed my own advice. Block moves with Zardax ARE this easy, and I stand corrected.

As for using Zardax with a RAM-disk, I have in the past had trouble making it work. Later versions of it do work, so my comments in the article regarding this are no longer valid. One is never up to date in the wonderful world of microcomputing!

Dear Sir,

Enclosed please find 20 copies of the "Australian Apple Review" returned for refund against your invoice.

We feel we cannot offer to our customers a magazine which:-

- Is written in the tone of a User Club Newsletter.
- 2. Avoids interesting Apple-related articles while concentrating on pointing out faults in Apple equipment and Apple corporate faults which our customers have no desire to know.
- 3. Recommends the purchase of "fake" Apples.
- 4. Accepts advertising from companies selling fake Apples.

Wishing you every success with future issues, we remain.

Mike Philip Random Access, Adelaide.

Ed. The other letters we have received are a better reply than any I could make.

Dear Sir,

Best wishes for the success of your magazine. The article on page 14 (on the Random Number Generator) was worth the price alone. I have been puzzled as to why the "Tattslotto" program I had devised churned out the same sets of numbers on the first run. I referred to the "Apple Users Guide" but this merely mentioned "repeatable sequences" and was not very helpful to a beginner. Your article pinpointed the reason. However, I am not sure how to include the suggested remedy in the program and would appreciate your help.

You can see that I am in favour of a "troubleshooter" or "problem" corner for the magazine as well as the particular type of article mentioned earlier.

Again good luck to your venture. I think there is a great opening for an Australian brand of Apple specialist.

M H Knight Melbourne, Vic

Ed. To incorporate the true random function in your program, just leave your program as it is and put the three lines mentioned in the article right at the beginning, ie.

1 S = PEEK (78) + PEEK (79) * 256

2 X = RND (-S)

3Z = RND(-RND(9))

You will have to change the name of the variables if you use the same names elsewhere in your program.

You will notice a small "Ask Felix" column in this issue, which should grow into the kind of troubleshooting column you want.

Dear Sir,

I've just read your first issue from cover to cover. After an initial shock at its slender size relative to other established publications, I found myself absorbed in **every page**. It was pitched just where I am at, and provided loads of valuable information for me.

As an owner, like yourselves, of a "fake", I found it rewarding to read your review of "fakes", and found myself contemplating the way in which these machines have been ignored by other publications. I might add that I haven't had a spot of trouble yet with my clone. I've been researching word processing packages for use in my school and your review of the two I was considering provided invaluable help. I've now got the external "evidence" I need to make the necessary recommendation. I'd heard about Sandy's, seen Zardax and Bank Street Writer. Your review confirmed my decision. Likewise your review of the Olympic "printer" helped to justify my recommendation for our purchase of an interface electronic typewriter to act as printer. Setting it up was a nightmare because of the badly written advice as to interfacing, and computer houses' varying advice.

Since you seem to have hit my level of understanding, I'd love to see you providing explanatory articles/reviews of various utility programs and their

documentation. So much is assumed in this area, it's really hard for beginners not to be misled or conned, or waste hours learning to master programs that **should** have better documentation. When I think about it, most of my hardware and software knowledge has come from advertisements in the first place. That's a little pathetic, isn't it? So please, more on what peripherals do, utility programs, reviews of data base packages and general "how to" stuff in the future. Then I'll really be hooked on your publication.

The best of luck and advertisers to you! May they knock your doors down.

Mrs A.B.Bunnett Albert Park, Vic 3206

Ed. I only wish the advertisers were knocking our doors down, but the future looks bright. We intend including the types of articles you mention: perhaps you may find that some in this issue fill the bill.

Dear Sir.

Compliments on your article re fake Apples. Two of our people at work have recently bought "bananas" in Hong Kong. One of these does have an auto repeat function. Interestingly the other computer, bought from the same store, does not have an autorepeat function. I am bringing this to your attention because of your comment that it was impossible to build in an automatic repeat key function. The powerpak in one of the computers has already blown up and is at present being fixed. A screen was purchased with one of the computers which has a very unstable vertical hold.

Another apparent problem seems to be that several disks have been destroyed. Could this be related to the fluctuating power supply, or possibly to the disk drive? The disk drives are labelled "Promas". Have you had any problems or can you offer any comments on these drives? They don't seem to load Diversidos (a fast DOS from the USA).

Chris Grainger Warragul, Victoria

Ed. By not autorepeating, we meant the facility where a key will repeat if you hold

it down, as on the Apple //. Most machines we have seen have a repeat key. Regarding your disk drive problem, we have experienced the same thing on fakes, and on real Apples. There exists a program called "Fixcat", which your dealer or local User Group should be able to steer you towards, which retrieves lost files on apparently destroyed disks.

Dear Sir,

I have just finished reading your article regarding fake "Apples", truly a sorry tale of unreliability. That has prompted me to write of another sorry tale of unreliability — not in fake "Apples", but in the real McCoy!

You will, no doubt, remember the special offer to schools about a year ago when Apple took the opportunity to sell out its II Plus models prior to the issue of

the //e.

In this little area of North Queensland I know of twelve of these computers that were purchased at that time. They were nearly all delivered in the week prior to the six week Christmas holiday break and were offered with a three month warranty — very cunning as you can see. By delivering them at that time, the computers spent two months of their warranty period still unpacked, in school storerooms.

The first breakdown occurred in the third week of school this year — still under warranty, sure, but 1,200 kilometres from the nearest Apple dealer! Cost of return air freight?? . . . \$120! Well, some months on and fourteen, yes 14, breakdowns later — spread among 12 computers — you will appreciate why I'm beginning to think that the "fakes" don't have a monopoly on unreliability.

Certainly we've had no power supply malfunctions . . . yet . . . but then the failure of a ROM chip can be just as serious a problem for one completely ignorant of electronics and 1,200 kilometres from a serviceman. It would indeed be interesting if our Department surveyed the schools that took part in that offer and determined the failure rate.

Congratulations on your initiative in starting an Australian Apple magazine; I wish you success with the venture.

J H Stephens Innisfail QLD

New Apple /// serial card

Apple has announced a new serial interface card for Apple /// users requiring interface to more than one serial device. The card supplements the existing serial port in the Apple ///, allowing more than one serial device to be connected at the same time. For example, the Apple /// will be able to print documents while simultaneously communicating with another computer, via a modem. Up to four cards can be used at once.

The recommended retail price of the Apple /// Serial Card is \$295.

MS-DOS and new drive for Apple II

A disk drive that will enable the Apple II to run programs using the MS-DOS operating system has been announced by Rana Systems and Apple Computer Inc.

The Rana 80862/2 is a plugcompatible co-processor and dual disk drive system, using an 8086 microprocessor with a double-sided drive providing 360K bytes of storage per drive. The co-processor will provide 256K bytes of main memory, expandable to 512K bytes.

Apple have fully supported Rana in the product's development. It should be available in Australia by the middle of 1984.

The drives will also run programs that are based on Apple operating systems, including the new Prodos.

Lisa features for Apple //e

In the USA recently Apple demonstrated to selected dealers new Apple //e features which enable at machine to incorporate many of the features of the Apple Lisa, such as the mouse and multiple pull-down screens. No formal announcement as been made, but it is believed the device, consisting of a single impare card and software, will be announced in 1984.

Apple enjoy million dollar day

Apple Australia recently enjoyed their first ever day on which turnover exceeded \$1 million. This was September 30, the last day of the Tenth Australian Computer Conference. The result represents a significant milestone for Apple Australia, coming just five months after they took over Australian distributorship.

The seven-figure sum occurred on what was the last day of the "Apple Goes Bananas" promotion, when recommended and discounted prices of Apple //e computers reached their lowest points yet in this country.

Imagineering grow still bigger

In yet another major restructuring and expansionary move, Sydney software distributors Imagineering have moved their warehouse to a 15,000 square foot bulk store a block from their Ultimo offices. This has enabled them to convert previous warehouse space to areas for dealer seminars and a show room.

The company has been restructured to reflect the increasingly divisional nature of operations. Apple products are now handled separately from the smaller games-oriented machines, and representatives have been appointed on a regional basis.

New Sandy Word Processor for //e

A new version of the popular Sandy Word Processor has been released for the Apple //e. The updated software takes advantage of many of the features of the Apple //e, especially the extra memory and the larger keyboard.

The program comes with muchimproved documentation and several new features, such as a glossary function. The price is less than for the Apple II version, \$180 plus tax.

Further information: Wytand Pty Ltd (02) 630 3807.

IBM PC runs Apple II Software

In a further development in the battle for microcomputer supremacy, a new board has been announced for the IBM PC which will allow it to run virtually all Apple II software directly, with no reformatting of disks required. The "Quadlink" is virtually a complete Apple II board, containing a 6502 microprocessor and all the Apple II's video and graphics circuitry.

With the new board, an IBM PC owner can run Apple software at the press of a key. It is distributed in Australia by Anderson Digital Equipment Pty Ltd of Melbourne. The recommended retail price is \$935.

Apples in education

Apple Australia have once again been awarded a NSW state government contract to supply Apple //e's to schools and government departments, though many other popular microcomputers (Microbee, Atari, IBM, BBC Acorn) were also successful. Previously such contracts were awarded to Apple alone.

Apple have also reported that they were successful in the recently announced Queensland Government Education contract, and that the

Apple //e is one of only three machines recommended by the Commonwealth Schools Commission.

In a separate announcement Apple have declared that the //e starter system will be available to school teachers for \$1,840. This is \$500 less than the recommended retail price, but not a big saving on the prices being quoted by many of the major Apple discounters.

To qualify for the special price buyers must be full time qualified teachers and must undertake not to resell the systems for a year.

"World's first" kitchen manufacturing software

Universal Business Software of Linden, in the Blue Mountains west of Sydney, have announced a software package designed for medium size kitchen and furniture manufacturers. The software is designed to run on an Apple II, and carries out most of the laborious costing, estimating, measuring, and accounting jobs involved in small scale kitchen manufacture.

"Kitsoft" was developed by Ken Price, a kitchen manufacturer with a background in aeronautical engineering. He was assisted by Laurie Boshell, who developed the Vision-80 Visicalc pre-boot disk. "As far as I can determine the software is unique in the world. It uses current micro technology in an area that is still labour intensive and relatively untouched by technology", says Ken.

Further information: Universal Business Software. (047) 51 4270.

Pascal on Lisa

Apple Computer Inc have begun shipments of Pascal for their Lisa computer. Apple say that this will expand the market reach of independent software developers, and that a variety of applications are already under development by firms which received early releases.

is the preferred "Pascal programming language at Apple and the one that was used to develop the Lisa office system," said Bill Libby, Systems Software manager at Apple personal office systems division. "It will not only spur the development of applications, but existing applications can be modified to take advantage of the Lisa graphics and mouse capabilities. Compiled Pascal programs will run at great speed and have full access to the power of the Lisa''.

Apple lose Wombat case

In a landmark decision, Apple Australia have lost a court battle against the importers of the "Wombat" Apple-compatible microcomputer. In a case that Apple expected to win, Mr Justice Beaumont of the Federal Court in Melbourne ruled that computer programs, such as those resident in the Apple's ROMs, could not be copyrighted. He said that although the Apple II and the Wombat were similar, they were clearly distinguishable by their different brand names.

The decision runs contrary to the findings of similar cases in North America and Europe. It is the first time Apple has lost such a case, and Apple seem certain to appeal the decision. Mr Mike Suss, managing director of Computer Edge Pty Ltd, who import the Wombat, was delighted with the decision. "It has broken Apple's monopoly and opened the way for a flood of low-priced Applecompatible computers," he said. Computer Edge plan to start manufacturing Wombat computers locally, starting immediately.

The decision has widespread ramifications which go beyond the "fake Apple" controversy. At least temporarily, the go-ahead has been given to a number of imitators of all variety of computer products. The results of this will became obvious in the very near future, and more court cases can be expected.

Apple "reviews" dealer base

In a controversial move, Apple Australia have given its hundredstrong Australian dealer network 30 days notice of termination of dealership, subject to re-negotiation. The action is designed to allow Apple to re-evaluate the levels of service and customer support provided by dealers.

"We are determined to set Apple apart by providing the highest level of customer support available," said Apple's Managing Director David "Our commitment to Strong. customers is not only to supply products of the highest quality, but also to ensure a constant level of support, training, installation and professional advice. Part of every system Apple sold is comprehensive support package designed to ensure that Apple customers receive the maximum benefit from their systems".

The letter of termination was a legal necessity if negotiations were to

be properly re-opened, said Mr Strong. Many Apple dealers, while realising that, were not happy. One large Sydney dealer, who did not wish to be named, said:

"I think the reason is that they can't demand anything extra from their dealers under the current arrangement. They can't tell people how to run their business, what machines to stock, to employ a fulltime Apple technician. I'm seriously concerned that Apple's reputation may be damaged, and that Apple products may consequently suffer. If it means there are going to be fewer dealers, then great, so long as I'm one of those dealers. I don't think it will stop discounting."

It seems Apple may have erred in their timing. Their press release, stating that all dealers were affected, was released on 7 November, before many dealers were aware of Apple's plans.

All but two stores remained dealers, which led many to question the wisdom of the move.

Apple appoints government accounts executive

Mary-Louise Parkinson has been government account appointed executive for Apple Australia. She was previously sales manager at Rob and Steve Byrne's Computerland stores at Chatswood and North Sydney.

Her role will be to build stronger relations with all government departments, state and federal. A major part of her work will be liaising departments education with throughout the country.

The AlphaSyntauri Music System

Reviewed by Graeme Philipson

o matter how much I learn about computers in general, and the Apple II in particular, I am consantly amazed at what they can do. They re only machines after all, but certainly not machines in the sense that have understood the term up to now. When used creatively, computers serve an extension of human abilities, providing facilities never before possible.

The latest cause of wonderment is the AlphaSyntauri Music System, a group of Apple peripherals and software which an Apple II or //e into a fully-blown suical synthesizer. Now synthesizers have been around for a while, since before Robert Moog (pronounced Moag") first popularised electronic

music with Bach renditions in the early 1970s — remember "The Well-Tempered Synthesizer"? More recently Australia's Kim Ryrie has popularised the Fairlight Music System, a sophisticated and versatile synthesizer which has found wide acceptance throughout the world.

But with the coming of personal computers it was only a matter of time before someone harnessed a keyboard and an oscillator to one to form a music synthesizer. There are a few of them around now, but none so good as the AlphaSyntauri system for the Apple II. The AlphaSyntauri has been available in Australia for a couple of years now, but only recently has it been distributed by an authorised and knowledgeable

dealer fully able to appreciate the system's remarkable capabilities.

CompuMusic

In St John's Rd in Glebe in Sydney there is a small shop called CompuMusic, run by Ken Guntar and Jacqueline Jourbet. Ken is a professional keyboard musician of long standing, with a passionate interest in electronic music. Like so many other people in many other fields, it is his other interests that have brought him to computers, rather than vice versa. CompuMusic has only recently been appointed Australian distributor for the AlphaSyntauri system. They have also



negotiated an Apple dealership, which enables them to sell complete systems: Apple with AlphaSyntauri and software for word processing or business uses.

Ken, being a musician rather than a computer huckster, doesn't fit the normal image of the high technology salesman. But after a short talk with him it's obvious that his commitment to computers is deeper than most. It's a labour of love. He has played the piano since he could get his fingers onto the keys, and has played with a jazz band in London and in continental Europe. He studied under Tristan Cary, one of the innovators of electronic music, at Adelaide University in 1976, and more studied composition, improvisation, and electronic music at Melbourne University.

Putting it through its paces

Ken first saw the AlphaSyntauri in London two years ago, where he fell in love with it immediately. It was what he had been looking for: a sophisticated synthesizer at a price low enough to be affordable to a working musician (most of whom don't have a lot of money and spend what little they have on instruments). Or his return to Australia he bought one rom a Sydney dealer who knew nothing about it, even selling him a RAM card which didn't work with the system. After much frustration Jacqueline, her mind oriented towards business as much as music, suggested that the two of them try for a distributorship. Thev established contact with AlphaSyntauri in Palo Alto (where else?), California and one thing led to another. But, as Ken says, "None of it would have been possible without Jacqueline. I handle the music side of but without Jacqueline's thinas. business experience we wouldn't have even considered it.'

Ken showed me the machine and some of its capabilities. I, who am not easily impressed, was impressed. Admittedly, he was pushing the output through a 600 watt Fostex amplifier, but any amplifier is only as good as its input: garbage in, garbage out. The system can just as easily go through a good quality hi-fi, where the quality of the sound will be better than that on your best records, and be limited chiefly by your own musical ability.

At the heart of the AlphaSyntauri is the Mountain Computer Music system.

This device consists of two linked Apple boards, which must be mounted in adjacent slots (4 and recommended). The Mountain Computer cards are a separate item from a different company, but they form an integral part of the system. The two boards are essentially oscillators, electronic circuits for generating noise signals. When used alone they can be used to compose and play back music, but only in a cumbersome fashion which makes experimentation difficult and live performances impossible. You can also use the ALF music card, but this limits capabilities of the system. supply CompuMusic alwavs Mountain AlphaSyntauri with the Computer cards.

Keyboard and software

To these cards the AlphaSvntauri adds two vital components: keyboard and the software. keyboard is a standard two-bus 61 note octave) Pratt-Reed (five keyboard, as used in many commercial instruments and synthesizers, including the Moog. AlphaSyntauri have added circuitry and an Apple interface card which allows the Apple to scan the keyboard every 10 milliseconds to determine the state of a key. As there are two contacts on each key, a comparison of the times between when these two contacts are closed can determine the force with which the key is hit, which is itself an important determining factor in how a note sounds. There are also two pedals, for portamento (sliding between notes) and sustain effects.

So far, so good. Now we come to the software. It's a truism, but one that needs to be repeated time and again, that hardware is only as good as the software which runs on it. And this is where the AlphaSyntauri really shines: not just because of the software, but because the software is so accessible. No other synthesizer in the world allows the user such access to the software, allowing customization to the highest degree.

Metatrak II

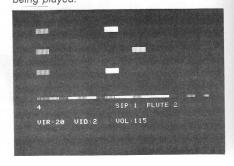
Let's have a look at this software. Central to the system is the "Metatrak II", described in the blurb as "a revolutionary all digital software based

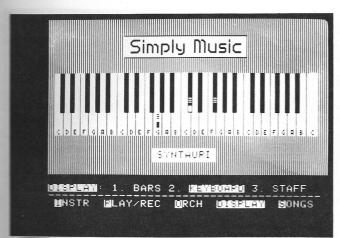
16-track synthesizer recording system for the AlphaSyntauri synthesizer — high performance at an affordable cost''. (That's six adjectives, or nine if you count individual words.) Well, it is all of those things.

You can record and play back anything you play on up to 16 channnels. You have complete control over playback speed (and digital recording means that faster speed doesn't mean a higher pitch, as with a tape recorder), you can plug in a drum machine ("All popular brands!"), you can mix and remix it as much as you like, altering vibrato and timbre and volume of each track individually. You can certainly do a lot more than I would have thought anyone would ever need. But then, my own musical ability doesn't go far beyond a tuneless rendition of "Your Cheating Heart" with my own three-chord guitar accompaniment. I can also play the odd piano chord, but those little black notes are still a mystery

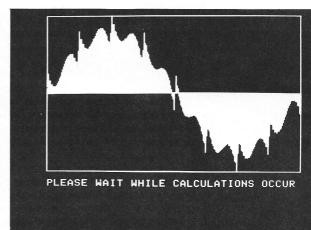
Your own recording studio

The Metatrak II is essentially a recording system, allowing you to manipulate your different channels with a lot more ease than is possible with conventional tape-based systems. which can be integrated with the AlphaSyntauri quite easily. If you want to use the system as a live instrument, you need to define your sounds, and then set up a "bank" that allows you to change between them when you want, like the instrument buttons on an electronic, organ or the preset conventional instruments on а synthesizer. You can easily define ten different instrument sounds and recall them instantly by access to the numerics on the Apple keyboard, and you can store up to 200 on a disk. The When composing, coloured "notes" appear on the screen. The three on the left indicate octaves, those on the right the note being played.

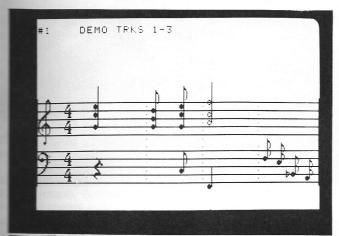




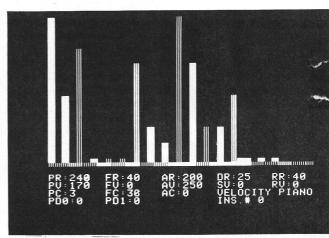
The "Simply Music" keyboard display, which allows you to match the note you are playing against the one the machine is playing, thus learning tunes.



A waveform being interpreted.



Musical notation displayed on the screen. This can also be printed



A graphical display of a sound's parameters.

```
PRESS 'H' FOR HELP.

PLAYBACK AND RECORDING CONTROL

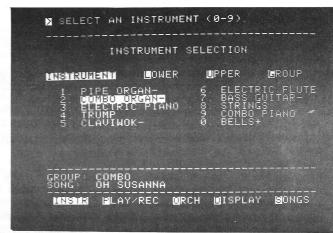
PLAYBACK AND RECORDING CONTROL

1. RECORD:
1. RECORD:
2. RASE LAST PART 7. TRANSPOSE DOWN
3. ERASE ALL PARTS 8. TRANSPOSE UP
4. LOOP 9. SLOW DOWN
5. MATCH 0. SPEED UP

METRO: 120, STATUS: LIVE
SPEED: 120% KEY: F MAJOR

MNSTR 243446490 WRCH WISPLAY MONGS
```

Payback/Record options.



Selecting an instrument. You can have thousands of different sounds, with up to ten instantly accessible at any one time.



The AlphaSyntauri System.

new Meta-expander allows up to 20,000 notes — over half an hour of music — to be stored and played back in one go. You can even transpose your tunes into a different key if your vocalist has a cold that day. Indeed, you can transpose

but the Apple's graphics make the job as simple as possilbe. In fact, the use of low and high-resolution Apple II graphics throughout is superb. Creation of sounds is not difficult, but you have to know what you are doing.



your tune into a different key for any reason.

Selection of sounds is by means of the "AlphaPlus" and "Sounds Trio" disks (don't you just love these names) which give you total control over individual sounds by allowing you to create the waveform you want. Creating waveforms digitally is itself an art form,

Analogue and Digital Music

All sounds are analogue in nature: they consist of a waveform, or usually a complex series of waveforms. Computers are digital: they process data which consists of discrete and definable quantities. In a computer-controlled synthesizer these two things must

somehow mesh. There is no problem in the actual production of sound, as synthesizer music is produced by voltage-controlled oscillators which are themselves controlled by digital signals in the computer.

But a problem does arise with the quality of the sound obtained. With conventional musical instruments, or even with analogue synthesizers, a rich sound can be obtained with little effort. With a large store of existing sounds it is easy to experiment and obtain new and interesting sounds. You don't have to know much about the mechanics of what you are doing. By fiddling with filter settings and the like you can get a new sound at the turn of knob.

With a digital synthesizer things are a bit more difficult. You don't have the same raw materials, you have to build your sounds up from the basics. This means that you need to know a lot more about harmonics and the nature of sound. You really need to know what

sound you want before you can create it. But armed with this knowledge you have much greater control over the type of sound you can create.

Analogue filters take a lot away from a sound while changing it, but digital synthesis allows an almost infinite number of changes to be made to sounds, since you have complete control over each parameter. It is much easier to determine a sound and to recall it later. And it is impossible for a digital device to go out of tune.

Digital technology

Digital technology also has major advantages when it comes to reproducing sounds and "remembering" certain sequences. With analogue synthesizers, reproducing a previously determined sound involves turning a lot of knobs to precise settings, while digital parameters can easily be stored on disk and recalled with a few key depressions. And when used as a sequencer, digital synthesizers can handle far more information. Most analogue instruments can play back 20 to 40 different notes, while the AlphaSyntauri (with a new disk emulator RAM card) can handle up to 20,000 notes for monophonic or polyphonic sequencing.

I won't go further into the mechanics of determining your sounds with the AlphaSyntauri. Suffice to say that you have full control over all the parameters of a waveform: attack rate and volume, decay rate, sustain rate, release rate and volume. There are 15 parameters for each sound. If you don't want to create your own notes, the system complete with about 200 "pure" different instrumental and sounds, from strings and brass to sounds with names like "croak" and woodpecker" and "ocean". "harmonic sweep" and "claviwop" are popular, too. There is also a complete emulation of all sounds available on the popular Hammond B-3 electronic organ, as used by many professional keyboard musicians.

The icing on the cake

And it doesn't stop there. One of the most remarkable pieces of software available for the system is the Composer's Assistant'' (why didn't call it "AlphaComp" or samething?), which prints out the score



of a piece of music recorded in the system. Now that may not seem much, but it is what serious musicians and composers have wanted since musical notation was invented. There is nothing more frustrating for a composer than to forget a clever few bars he comes across by chance, and no task more boring than transcribing notes onto a stave. A musician friend of mine just refused to believe it until he saw it, and went away shaking his head, his emotions confused and his innocence shattered. It is almost the musical equivalent of artificial intelligence. And it does it so well, polyphonically and with complete notation and with a text editor that allows you to add such things as lyrics, chords, and dynamics.

Where does it all end? Not there, not by a long chalk. If you're someone like myself who is not musical and desperately wants to be, there is a further software feature called "Simply Music" which teaches music, even teaches individual songs. A keyboard or stave appears on the screen, guiding you through individual tunes, in a musical style you choose yourself. You can then compare what you played against the original. You can change the tempo (of course), you can play any instrument you want, you can even orchestrate the whole thing yourself. It seems ideal for the musical illiterate like me or the practised professional who wants to sharpen up his keyboard technique or learn a new song in a

"Simply Music" is the latest addition to the software. All the software is continuously being improved and updated. The current plan is to incorporate all these different packages into one larger system, to make it all hang together a little better. It's not a big problem now, but you do need to do a bit of disk-swapping at times.

The icing on the icing

There is also a "MusicMaster" educational package available for schools, teaching the basics of music. This is a full teaching program, down to the recording of marks and the tracking

of individual efforts. The system was developed by Dr Wolfgang Kuhn at Stanford University and Dr Paul Lorton at the University of San Francisco, world pioneers in the use of computers to develop musical abilities. It is based on the "Plato" system (see review elsewhere in this issue). The MusicMaster teaches all basic musical skills and theories, utilising the capabilities of the whole AlphaSyntauri system.

You can even talk to our aquatic cousins, dolphins, with the "Dolphin Dialogue" package. I haven't tried it, but the blurb states that it consists of "sounds developed for the man-dolphin communications project". You can even design your own sounds, which could presumably be something rude or suggestive or even pornographic to dolphins. (Pssst! Wanna see under my dorsal fin?) I can only wonder what the dolphins think of all this.

As I say, I am very impressed with the whole package. Such things are, to my mind, what computers are all about. The magic question, of course, is "how much does it all cost?" Around \$4,000 (plus the Apple II) for everything described in this article; hardware, software, dolphins, the lot. Sure, it's expensive, but it's also cheap. especially when you consider the alternatives. Many people spend much more on an electronic organ with a fraction of the capabilities. Stand-alone synthesizers, such as the Fairlight, cost four and five times as much.

The price is such that only the well-heeled would buy it as a toy or even as an instrument, for professional musicians and recording studios it represents real value for money. I can also see schools being interested; in fact anybody with an interest in music. I only wish I had one.

Postscript: CompuMusic have just announced a new and smaller system, chiefly for the home user and hobbyist. It has much the same software and a smaller keyboard, and is priced at around \$2,000, at which price it becomes very affordable and a real alternative to that electronic organ you were thinking of getting. □

Forth

by David Hanney

Imost everyone with more than a passing interest in computer programming has heard of Forth. It has a reputation as a somewhat enigmatic language surrounded by mystery, attracting from its adherents an almost religous fanaticism. A discussion with these Forth supporters leaves you feeling that other languages are suited only to be used by someone with an IQ you can count on your fingers.

When people explore the language further, one of two things usually happens: they become wholehearted converts, to the total exclusion of all other languages; or they won't touch the thing and become positively hostile whenever anyone innocently starts up a discussion on the subject. This second reaction is unfortunately common. It is usually caused by a poor introduction to what initially appears, to a person used programming common technique, to be a thoroughly illogical and lunatic method of getting a job done.

It is therefore the aim of this article to try to clear up this image and to bring an understanding to all.

The birth of Forth

Forth was the brainchild of Charles H. Moore, who developed it in the USA during the late 1960s as a tool to assist him in the development of control routines for the radio telescope at the National Radio Astronomy Observatory (NRAO). Moore developed the language because of his frustration with the working languages of the day, which were not suited to the small machine environment and memory capacities which he had to work with. The compilers of the day produced massive amounts of code which could not fit his needs and were much too slow.

His only alternative to high level languages was, of course, machine or assembly language. While this solved the speed problem it did not solve the space problem. And it was not nearly as convenient to write as was a high level language. To solve these problems he decided to develop his own language. The result was a high level language

which could reside in about 7K of main memory. New commands could be added by the user, its execution time was only 20% slower than that of direct machine code while taking up 80% less space. And most important of all, it was flexible and once learnt it was easy to use.

Moore achieved all this by departing radically from the norms of language design. About the only thing he retained is the concept of structured programming, an inherent part of Forth.

Considering this background it is not surprising that the greatest application of Forth has been in the process and industrial control areas. It is being used in such diverse applications as controlling experiments in the NASA space shuttle, tracking the progress of that same shuttle and other vehicles through their missions, controlling security systems in factories and robots in manufacturing plants and, of course, the purpose for which it was originally created: control of telescopes in most of the world's major observatories.

Forth was not developed overnight. Success came only on the fourth attempt. The final version was originally called "Fourth" to denote the version, but due to the happy accident that the IBM assembler it was being developed on only accepted five letter labels, it had to be shortened to "Forth". Since that time paraphrasists have been spouting

such gems of wisdom as "starting FORTH", "going FORTH", and most recently, "may the FORTH be with you".

What makes it tick?

There are two main concepts central to an understanding of Forth: Reverse Polish Notation (RPN) and the "threaded language". Reverse Polish Notation owes its name to Copernicus, and entails a slightly different way of understanding conventional arithmetic.

A Forth programmer makes use of a "stack" and a "dictionary". The stack is best visualised by thinking of a hollow tube with a spring inside. Plates may be pushed into this tube, gradually compressing the spring until no more plates can be inserted from the top. Plates can also be removed, allowing the plate below to be pushed up the tube ready for its removal. Now think of the plates as numeric data, the tube as a block of memory, and the spring as a pointer showing which item is at the top of the tube (stack) at any time. As numbers are pushed onto and popped off the stack the pointer changes, indicating to the system the current state of the stack.

The operation of and value of this pointer is normally transparent to the user, although it is freely available at any time. To users of Hewlett-Packard or other RPN system calculators, this

concept will be quite familiar, the difference is one solely of scale. Instead of a stack with a maximum capacity of three or four numbers you now have the ability to keep 4,000 to 7,000 numbers, depending on system memory size. Figure 1 illustrates the stack concept.

It is important to understand this structure, since it is at the heart of Forth's data manipulation. Data is passed to and from Forth programs using the stack, and a number is pushed onto the top of the stack by simply entering it. Here is a simple Forth routine to add two numbers together and print the answer on the screen:

123456 + .

If this line is typed into a Forth system the following occurs:

- 1. The number 123 is placed on the top of the stack.
- 2. 456 is placed on the stack, pushing down the value 123 which was previously placed there. The stack now contains the two numbers 123 and 456. Figure 2a).
- 3. The "+" (plus) symbol has been defined in a Forth system as meaning pop the top two values off the stack, add them together and push the answer back onto the stack". (Figure 2b).
- 4. The result is printed to the screen so that the user can see it. This is accomplished by the symbol "." period) which is defined as meaning pop the top number off the stack and print it out the screen".

5. The stack is now exactly as it was when we started, with nothing on it. (Figure 2c).

All data and operations in Forth are handled similarly, by pushing and popping items to and from the stack. You may wonder how the "plus" and "period" symbols got into the act, as they are certainly not numerical values. These symbols are indeed not numbers but are what Forth calls "verbs". We find verbs in the dictionary.

The Dictionary

The dictionary is where the commands that tell Forth how to perform specific operations are kept. It is not unlike a real dictionary, being indeed a list of definitions which is referred to by Forth to determine what particular symbols mean. Each entry in the dictionary is called a verb.

The dictionary can be added to or extended by the user with new verbs at any time. In fact, this is the way in which Forth programs are created, by extending the language until it contains all the verbs necessary to perform a particular function. As each new verb is defined it is placed on top of the current dictionary list, along with its definition.

Now let's have another look at our program. In a Forth line the individual items, verbs and numbers, must be separated by a carriage return or a space. When Forth executes an item in a line it first determines whether the item is a number. If it is, the system pushes this value onto the stack and carries on. If it is not then Forth assumes it is a

verb, and looks for it in the dictionary from the top down. When (and if) it finds it, it commences execution of the definition assigned to that verb.

Verb definition

Verbs are added to the dictionary by telling the Forth system their name and what they mean. Here is a simple example:

: SALESTAX 100 / 15 *;

The colon indicates to Forth that you wish to define a new verb. Upon seeing this colon Forth assumes that the next item on the line, "SALESTAX", is the new verb's name. After that everything up to the semi-colon is assigned as the definition of the verb. The newly constructed verb is then added to the top of the dictionary ready for use. To make this clearer let's see how this new verb is used:

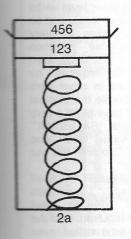
150 SALESTAX .

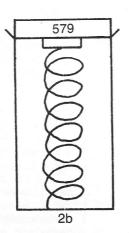
You will remember that Forth examines each item in the line to determine whether it is a number or a verb. What happens in this case? Forth first comes across the item "150", determines that this is a numerical value and consequently pushes it onto the stack (Figure 3a). Forth then comes across the next item, "SALESTAX", and determines that, as it is not a number, it must be a verb. Forth then immediately begins to search for this name in its dictionary listing.

We have previously defined this verb using the colon definition, so that Forth can find it. Once the entry is found the verbs contained in its definition are executed exactly the same way as if you had typed them from the keyboard. The first item is 100, which is pushed onto the stack leaving (Figure 3b).

Next Forth comes across the "/" symbol, which is not a number and must therefore be a verb. So it searches the dictionary again until it finds the verb "/". It will then commence execution of the definition of that verb, saving its

current place in the SALESTAX verb so that it can return to it. The idea is very similar to calling a procedure from Pascal or a subroutine from BASIC or FORTRAN. "/" is defined in Forth as





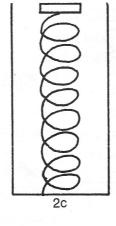
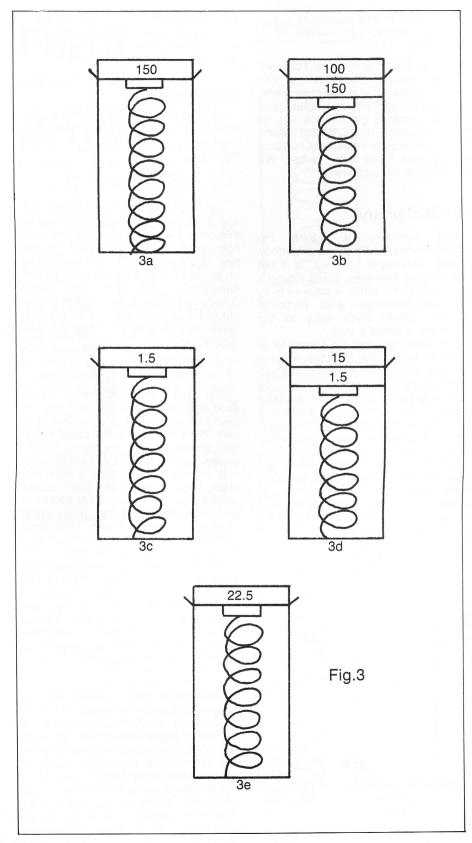


Fig. 2



meaning "pop the top two values off the stack, divide the value second on the stack by the value on the top and push the answer back onto the stack" (Figure 3c).

Forth now continues execution of the "SALESTAX" verb by pushing the value "15" onto the stack (Figure 3d). It will then execute the next item, "*", which is another verb name defined as "multiply the top two numbers on the stack and push the answer back onto the stack". Of course the original top values are removed before the multiplication is performed (Figure 3e).

Forth now comes to end of the SALESTAX verb (as indicated by the original semi-colon). This acts in the same way as a "RETURN" command from a subroutine in BASIC. Control will now return to the original line and the item after the word SALESTAX will be checked. This turns out to be a "." verb, which as you remember means "pop the top value off the stack and print it". Therefore we can see that our original line of

150 SALESTAX .

would mean exactly the same as if we had typed instead

150 100 / 15 *

You can see therefore that we can define our "SALESTAX" verb as meaning "divide the number on the top of the stack by 100 then multiply it by 15 and print the answer to the screen".

This then is briefly the way the dictionary works, and is the main reason why Forth programs are so compact. Higher level verbs call lower level verbs which can call even lower levels and so on and so forth. It makes for very compact coding because common operations are defined just once, then re-used as often as required by mentioning their names in other verb definitions. In our example the original line, which could itself have been a verb definition, used the verb "SALESTAX" to return 15% of the value "150", and then called the verb "." to print this out to the screen.

Similarly, the verb "SALESTAX" itself called the verbs "/" and "*" to perform the operations of division and multiplication which it required. And the divide and multiply verbs called even lower verbs to perform sections of their

operations. You can see why Forth is sometimes called a "threaded language". This method of "threading" verbs together makes Forth both fast and powerful, extending the language by defining new commands in terms of existing lower-level ones.

This has by no means been an extensive introduction to the Forth language. The intention has been solely to kindle an interest in all those who have perhaps been interested in finding out what all the fuss has been about, or to give an incentive to those who didn't like what they saw the first time to try again.

There are a number of Apple II Forth systems available:

Softtape Forth — approx \$50.00

This is a good starting system for the beginner. It comes with an excellent set

of predefined verbs and a number of extensions. These include an editor, low resolution graphics, and string-handling verbs. It is altogether a nice starting package, with a good manual.

Hayden Superforth — approx \$75.00

This is the cheapest Forth system for the Apple with both hi-res graphics and floating-point verbs already defined for the user. But the documentation is poor and it is much slower than the Softtape system.

Graforth — price not available

This was an attempt by Paul Lutus to give Forth a BASIC-like structure, while still retaining the stack and dictionary concept. Unfortunately in doing so he

managed to bring the execution speed down to the level of a BASIC interpreter which rather defeats the purpose. I do not recommend this package, as it is of little use even as a teaching tool, due to its non-standard structure.

None of the above systems come with a suitable teaching manual for learning Forth from scratch. For those who want such a book I can recommend too highly "Starting Forth" by Leo Brodie. It is based on the non Apple Forth-79 standard, but introduces in an easy and friendly was the concepts of Forth to new users.

I trust that this article has explained some of the mysteries of this remarkable language, and that it will prompt some people to take the plunge. It is no expensive: for as little as \$50 you car start your journey up Forth mountain. It is a long and sometimes difficult climb but if you persevere you will find that the view from the top is breath-taking.

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DEALER ENQUIRIES WELCOME

Fake Apples — a continuing story

by Gareth Powell

In the last issue I wrote about fake Apples, and I was showered with abuse from various Apple supporters who thought I was, as it were, supporting the enemy. Not so. As a reporter I was merely recounting the facts. Since that article was printed new facts have appeared. Dutifully I shall report them.

Firstly I should report that I tested a fake Apple on which the power supply (the Achilles heel of all fake Apples) was labelled, quite clearly and quite falsely, Made in the United States. (The suggestion being that this therefore was

a superior article.)

In the USA they have an organisation called the Underwriters' Laboratory which makes sure that all appliances with their seal are, in theory at least, safe. The power switching device on this Apple would never have passed any test. Ten minutes after I switched on there was an explosion which sent a flame across the back of the Apple, partially blinding me and sending me into a state of shock. This indicated that all was not well. Felix Macri took one look at the power supply and confirmed that it was indeed made in Taiwan and that the condensers had exploded, bringing grief and confusion to all.

Change in fashion

Secondly I should report that I made the trek out to the Golden Supermarket (corner of Fuk Wa and Kweilin Street in Shamshuipo, Hong Kong) and found that the scene was changing. To start with, the number of shops selling fake Apples has drastically decreased. Their place has, in many cases, been taken by clothing stores. Next, many shops appeared to be selling IBM PCs. A turnup for the books, indeed. I managed to get one shop owner to open a machine for me. Surprise, surprise - there was our old friend the fake Apple Victor 10 64K board forming the basis for this "IBM lookalike".

Taiwanese manufacturers seem to have gone over to IBM copies in a big

way. But not wanting to waste all those fake Apple motherboards, they have decided to combine, as it were, the worst of both worlds.

Now this may strike you as fiendishly clever. I asked the shopkeeper, in my poor Cantonese, whether the machine would take IBM software. He, the naughty sinner, swore that it would. Unless there has been a technical breakthrough in the Golden Supermarket of which the rest of the civilised world is unaware this is unlikely.

After Hong Kong I visited Taiwan to see whether this evidence was supported there. I found, to my amazement, that Taiwanese traders are starting to observe international patent and copyright laws. The only reasonable explanation for this is that commercial and legal pressures have combined to make them toe the line. (To show how far things have gone in the overall fake manufacturing field, it is now almost impossible to buy a fake Rolex in Taiwan. Before they were as readily available as noodles and almost as cheap.)

It is true that fake Apples are still being made, but the first fine frenzy is over. Instead the manufacturers are moving over to fake IBMs. This is not because they believe that IBMs are more saleable than Apples. It is simply because they can legally manufacture IBM copies, which means that the worry of illegal manufacturing is removed. Whether, at the same time, we will see a better product remains open for some discussion. While I was there I discovered an independent Swissowned testing laboratory which, for a relatively small fee, is willing to check out any computer before it leaves Taiwan to make sure that it reaches the , buyer's specifications. Their facility was being sadly underused, possibly because the Taiwanese manufacturers welcomed their presence with all the Australian enthusiasm of an businessman greeting a tax inspector.

There is no doubt, however, that the

scene is changing and it is possible that the supply of fake Apples from Asia will dry up within a year.

Peripherals

Manufacture of peripherals (some of which do not involve any patent breaking) will continue unabated. In a weak moment I purchased a hang-on fan device which also (so it was claimed) suppressed voltage spikes, cooled the computer and provided two extra sockets. It lasted for three days, and then the fan started making noises reminiscent of an elderly consumptive. I decided to take it apart to repair/replace the fan.

No skill and no tools were needed, for the workings and the electrical wiring were guarded by a plate pressed into position. There were, it is true, four screw holes for attaching it, but the screws were as usual an optional extra. Beneath this flimsy plastic plate lay some straight wiring to the fan with no sign of any suppression circuit whatsoever. The fan had collapsed and was irreparable. I replaced the fan and forgot about the voltage suppression circuit. I admit it looks quite splendid on my Apple, but whether the fan has a serious cooling effect is debatable. What is worrying is that it is sold as an example of Taiwanese expertise, and it does not fill one with confidence for the future.

Hong Kong distribution

In Hong Kong the distribution of real Apples has changed yet again and is now in the hands of one of the medium sized trading houses. There was a total lack of comment on the change in the local newspapers and one was left to speculate what the real reasons were. There is no doubt that Apple has been aggressively sold in Asia but there is also no doubt that it has had to compete with a flood of fakes. Whether the new distributor can improve that situation remains to be seen.

Rocky finds not so rocky path to spreadsheets

"Experts Systems" by Microsoft

ith the introduction of the Apple II the mystery surrounding computers began to disappear. Programs like Visicalc and Multiplan meant that people could use a computer without having to learn how to program it. However, there was a major drawback. You needed to learn the Visicalc lingo to talk to the program. Multiplan improved the situation with the use of English commands and formulas but you still needed to understand about replication, rows and columns and formatting.

The Microsoft Experts Systems change all that. It is so easy that a non computer user can use it. The system is a spreadsheet generator that creates spreadsheets for you, laid out with the headings that you want.

How does it work?

The Experts present you with a series of questions about your company and the worksheet you want to create. You answer them with a yes or no, or fill in the blanks. It is not a series of templates: you don't have to fit within a predefined format. For example, if your model covers a time period of 12 months and you want a monthly set of figures the Experts will create a model with 12 columns, each labelled with the name of the month. If you wanted a model with quarterly figures over a two-year period, then the Experts would create a model with 8 columns, plus a total column.

You can also set up and name categories and sub-categories. The system incorporates these titles into its questions when it requires more information from you.

The system also allows you to merlink data from other worksheets, utilising the data link concepts of Multiplan. Once you have created the worksheet you can save it for use within Multiplan.

Description

The Experts System uses the Multiplan SYLK file format to create a Multiplan model. It creates models that are used by Multiplan; you still need Multiplan to use the models you have created. It comes with two preset model concepts:

1. Microsoft Budget, creates a budget planning environment. It includes seven worksheets. Three are specifically for the manufacturing process, the other four are of general interest. They include Selling/Administration, Operat-

ing, and Variance Analysis.

2. Microsoft Financial Statement generates an income statement and a balance sheet in response to the information you enter from your financial reports. The system then generates a worksheet that calculates 18 key financial ratios. These are designed to indicate efficiency, liquidity, leverage, and profitability.

Also to be released are Microsoft Cash Flow and Microsoft Personal

Finance.

The presentation

These packages are presented in the usual quality Microsoft packaging. I



sometimes think they are over-packaged. The plastic box is nice, but I never use it and I suspect I have paid for it. The manuals are detailed and well laid out. They assume nothing, which makes them long-winded to experienced computer users. The systems come with the online help guide as found in Multiplan. They also have a similiar prompt line.

Microsoft Budget comes with four disks, Microsoft Financial has three. There is a keyboard layout sheet and various sample report sheets which are in tidy plastic holders at the rear of the manual, where you can remove them for

your own perusal.

Advantages

The Experts offers exceptional advantages over the old templates:

1) You can customise your worksheet for special applications.

2) It is easy to learn and use.

- It is reliable you answer the questions and the formulas will be correct.
- Data can be transferred between worksheets.
- 5) There is an online help function if you get lost.
- 6) There is no need to learn spreadsheet commands.
- Questions and answers are in plain English.

I am impressed by the local support offered by Microsoft. There is a hotline support facility for you the user at Microsoft in Terrey Hills (02 450 2522). Microsoft will also replace any disk out of warranty (90 days) for \$25.

PRICES (Recommended Retail including tax):
Microsoft Budget \$245
Microsoft Financial \$175

SYSTEM REQUIREMENTS:

Apple II 64K or //e, one disk drive. Apple DOS Multiplan (to use models created).

Got a question? Need to know? Just Ask Felix.

- Q. The logo on my Apple II plus microcomputer indicates "Apple II Europlus". What does this mean?
- A. Apple Computer Inc manufacture a number of different models of the Apple II. The Apple II plus is made for the US domestic market, and operates off 115 volts / 60 hz. The Apple II Europlus has been designed for the European and Australian markets, and operates off 230 volts / 50 hz. Hence the only difference is the power supply.
- Q. Why doesn't the RESET key work on my Apple II?



The Apple Ile bundle includes the Ile personal computer (with improved keyboard, more memory and other new features), monitor, disk drive, 80-column card and tutorial diskette.

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- A. Your Apple II computer is fitted with a switch which disables the RESET key. It is located inside the Apple on the little PC board under the keyboard. With the RESET key disabled you must hold the CTRL key down while you press the RESET key. With Apple IIs fitted with the Autostart ROM, three memory vectors may be altered so that pressing RESET will force the computer to branch to the addresses set in the vectors. This means that even a CONTROL RESET will not get you out of all programs.
- Q. How do I get out of a program that locks up the RESET key forcing me to turn off then on?
- A. The only way, short of turning the machine off, is to have a "REPLAY" or "SNAPSHOT" type card plugged in your Apple II.
- Q. I have heard that it is not a good idea to turn the Apple II on and off all the time. Why is this so?
- A. The main problem in turning the toggle switch on and off is that the Apple switch tends to arc (it spits and splutters at you) and will fail. This is a very common problem on the Apple II. The best remedy is to get a competent technician to replace it with a heavier duty switch.
- Q. Should I leave my Apple II computer' turned on rather than turning it on and off for short periods?
- A. There is no reason for you to turn off the Apple once you turn it on. The chips don't have any moving parts so they won't wear out. Also, the Apple is sensitive to power surges that may occur when you turn it on.
- Q. Which slot should I plug my interface cards into?
- A. It depends upon the operating system you wish to use. The most favoured environments are Apple DOS, Apple Pascal and Microsofts CP/M. For Apple DOS slot 0 must contain the Language card or the ROM card, slot 7 contains the Apple PAL card. The other slots are

free to be used as the user wishes, though 80 column cards usually go in slot 3. For Apple Pascal and CP/M slot 1 will contain a printer card, slot 2 a communications card, slot 3 an 80 column card, slots 4 and 5 optional disk drives, slot 6 the bootload disk drives. For the sake of consistency it is best to use these same slots all the time. Also, many less common cards have a recommended slot.

Note too that the Apple II has eight slots (0 to 7) and the Apple //e has seven slots (1 to 7).

- Q. Why can't I tab past column 40 on my printer?
- A. When the Apple was designed the TAB function worked with the 40 columns screen. To tab beyond this column insert a "POKE 36,xx" where xx represents a number between 40 and 80. With parallel printers, to print past 40 columns you must insert a "CTRL I xxN" before you print, where xx is the number of columns you wish to print (usually 80 or 132). To do this you can just print a CHR\$ (9) "xxN" immediately after your "PR1".
- Q. Should I use the reverse side of a diskette?
- A. Although it is possible, and a common practice, it is not advisable to use the reverse side of diskettes, for two main reasons:
- a). The head load button on the Apple disk will be adversely affected, as it is doing work it is not designed to do. This will eventually cause it to wear out and possibly damage your disks.
- b). The life of the disk itself will be shortened, because it is forced to revolve in two opposite directions.
- Q. What does the BASICS diskette do?
- A. This diskette is supplied to allow newer Apples to use version 3.2 of DOS, the forerunner of the current DOS 3.3. DOS 3.3 replaced DOS 3.2 in 1980. These earlier disks were in a different format, often called "13 Sector", and need the "Basics" disk loaded before they will run. Newer DOS 3.3 disks are sometimes called "16 Sector".

Plato Educational Series from Control Data

Reviewed by Tom Price

The original Plato was a learned old Greek gentleman who lived over 2,000 years ago. He was very wise and very knowledgeable about everything it was then possible to be knowledgeable about. He wrote books about philosophy, about laws and systems of government and education. He was a humourless sort of fellow, but his contribution to western civilisation has been such that some (Platonic) scholars say that all knowledge is in essence just a footnote to his.

In more recent times he has unwittingly and posthumously lent his name to a computer-based educational system developed by the American computer giant, Control Data. Control Data are famous for developing some of world's crunchiest numbercrunching computers, the Cyber series, and for the very good and very expensive courses they run to train computer programmers and operators. Australia, they also have an arrangement with Apple to service Apple equipment.

PLATO was originally an acronym for "Programmed Logic for Automated Teaching Operations", which seems so contrived that I'm certain they thought of the words after they thought of the initials. It happens all the time. The Plato system was originally developed at the University of Illinois by Don Bitzer, now called the "father of Plato". (I always thought that Socrates had most claim to that title.) Using the large and expensive computers of the day, supplied by Control Data, Bitzer developed a number of packages for what was then called, and still is by Control Data "Computer themselves, Learning", or CBE. Most other people call it "Computer Assisted Instruction".

Early Plato

These early programs would run only on time-sharing mainframes, but as computer hardware became more sophisticated so did the system, until it as available as a large data base

The "German Travel Vocabulary" main menu.

which could be accessed by anyone, usually other universities, who had a suitable terminal. The original terminals used had plasma screens, which have all but disappeared nowadays. They were hellishly expensive. These original systems had powerful graphics capabilities, when computer graphics was still a black art.

Plato came to Australia in 1976, when Don Bitzer gave the keynote speech and demonstrated three Plato terminals at the 7th Australian Computer Conference at Perth. Australians could use the system, but they still had to go via satellite to Illinois. Control Data improved Plato to the point where by 1979 it could be accessed by anyone with a conventional ASCII computer terminal.

With the microcomputer explosion of the early 1980s, some thought that Plato would become redundant, but it is just entering a new phase of its life. On a microcomputer Plato does not have the complexity it does on a mainframe. It is not so much, at this stage anyway, a sophisticated authoring language which

allows a teacher to set up a variety of lessons, subjects, or even whole university courses. What it is, however is a series of Computer Assisted Instruction packages which take advantage of many of the lessons learn on the larger machines.

Operation

So, how does it work? Two identical disks are supplied with each package. They are protected, so one acts as a back up if your cat eats the other one. Because of the protection method used. I had trouble booting the disk on a drive which was a little out of alignment: it seems the better protected a disk is, the more crucial it is that your disk drive be correctly aligned and at the right speed as "Wizardry" fans will know.

I got myself a decent disk drive and had another go. The program takes a little time, coming up with a "ONE MOMENT PLEASE" message, followed by another "ONE MORE MOMENT". On the one I was trying, the "German Travel Vocabulary", I was then



No computer has ever been as efficient as this.

In many ways, your office desk still remains the most productive way to work.

Everything's at your fingertips. The whole job's laid out in front of you. And you can do 10 things at once.

Yet, every computer ever devised has ignored this. Forcing you to work the way it wants.

(Assuming you can plough through the manual and learn a complex language of computer commands.)

New Apple Lisa is the very first personal computer designed to operate the way you do.

All of its awesome power isn't devoted to making electrons go faster, but to helping you go faster.

By working visually.

Complex computer commands are replaced with familiar pictures, or symbols.

Files look just like file folders memos like memos.

There's a calculator, a clock, a clipboard – even a wastebin – all in symbol form.

So, even if you've never gone near a computer before, instead of taking at least 30 hours to learn (as conventional personal computers do), Lisa takes less than 30 minutes.

To tell Lisa what you want you just point to the appropriate symbol, using a palm-sized device called a "mouse".

Move the mouse across your desk and the pointer moves across the screen.

No longer are you totally dependent on the data processing department.

Effortlessly you can turn figures into graphs, draw diagrams, paste worksheets into reports. And print out the lot while you get on with something else.

It's what computers should've been all along.

Does it all sound too easy? Is it just some kind of high-priced executive toy?

By no means.

Lisa is nothing short of the world's most powerful personal computer, with the internal memory of a mid-sized mainframe.

You may even feel Lisa could replace your desk entirely.

Except what would that leave you to put your feet up on?





NEWS

From Page 6

AUSOM Challenge

The Apple User's Society of Melbourne (AUSOM) is running a software competition, open to members of a recognized Apple User Group. Prizes are awarded in two categories: Games (\$250) and Education (\$500).

The contest is being sponsored by Verbatim Australia Pty Ltd, who are also offering prizes of Verbatim Clocks. Every registered entrant will receive a Verbatim Datalife Twin Pack (two blank disks).

Entries close on February 4 (Games) and June 2 (Education).

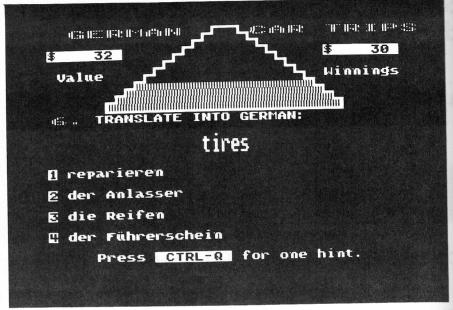
For more information contact AUSOM Challenge, PO Box 161, Altona Nth 3025.

New IEEE-488 for Apple ///

Innovated Peripheral Systems have released a new IEEE-488 interface card for the Apple /// computer. The card allows interface with a wide range of devices, particularly instruments and related peripherals. It is fully compatible with the Apple /// SOS operating system, and supports IEEE-488 sunsets C1, C2, C3, C4, and C25.

The card is distributed by Mostyn Enterprises of Dundas in Sydney.

SOFTWARE REVIEW



Plato in operation.

presented with a menu offering a range of options: there were a few different groups of words, like "food" and "transportation", and the possibility of German-English, English-German, or a mixed bag.

Once this option was selected I had a further choice of a "Hangman" type game or a jackpot arrangement whereby my (fictitious) money would double after I answered each question right. Having a rudimentary knowledge of the teutonic tongue (I'm at a level I call "Schweindeutsch"), I proceeded to demonstrate my skills to the machine. The hangman routine gives you a word in one language and you have to pick out the component letters of that word's translation. Every missed letter adds an extra plank to the gallows before the trapdoor is finally opened. You have ten questions.

Jackpot

The jackpot method I found more fun. After all, it's better to win fictitious money than to die a fictitious death. With this method you have to guess the correct English or German equivalent from four choices represented on the screen. If you choose correctly you get to play for double dollars on your next question, if you make a wrong choice you go back to \$2. I believe it's called "positive reinforcement".

All the options are randomly chosen,



so no two tests are alike. You have the facility to simply look at the word list, which is quite as comprehensive as you'd expect in something like this. The use of graphics throughout is very good, displaying bright colours if you have a colour screen. Although in this example the information is essentially textual, graphics are used to display larger and more attractive lettering. Some of the other non-language packages use much more graphics.

I didn't walk away spouting Goethe, but I could see that this particular disk could help my German vocabulary a lot, certainly more than a book could. I glanced through the other packages, all seemed aimed at a similar sort of level. Used in a more formal teaching environment than my untidy office they seem an ideal teaching tool.

Still, I think I expected a bit more. There's nothing that exciting about matching words. But as I understand it these first few disks are a simple start to the whole Plato micro attack, and much more sophisticated topics will be covered in future. I hope so, and given Plato's past I believe so.

Apple II FORTRAN GRAPHICS

by Tony Anderson

There is a problem with the use of graphics under Apple FORTRAN and version 1.1 of the Pascal operating system. The error is absent from earlier versions.

With version 1.1, a "Stack Overflow" error occurs immediately, a program containing graphics is run, requiring a re-boot. This is because the compiled code cannot find the necessary graphics routines in SYSTEM.LIBRARY at run time. Pascal does not contain this problem.

The solution is to run a small Pascal program which effectively "tells" the system where to find the graphics routine's location within the library. To make this process transparent to the user, the compiled version of this program can be included on the boot disk (FORT1:) as SYSTEM.STARTUP. The program is:

program readtable; uses turtlegraphics, applestuff; begin end To create and store this file, boot the system with Pascal disks APPLE1: and APPLE2: in drives 1 and 2 respectively, invoke the E)ditor, enter the program above, Q)uit the editor, and invoke the C)ompiler. Then use the F)iler to T)ransfer APPLE1:SYSTEM.CODE to FORT 1:SYSTEM.STARTUP. Re-boot the system using FORT1: and FORT2:.

This procedure need be done only once — the system will run this program every time it is booted, provided the boot disk contains the file as SYSTEM.STARTUP.

Use of FORTRAN Graphics and the Vision-80 Card

All graphics images produced under the Apple Pascal 1.1 operating system are displayed on the Apple's 40-column screen, and are thus normally invisible as the system automatically accesses the Vision-80's 80-column screen. To see this image it is necessary to toggle between the two screens, which is normally done using a CTRL-Z "T".

Under FORTRAN program control, this must be done using the following (extra code is in CAPITALS):

USES TURTLEGRAPHICS

program draw CHARACTER CTRLZ,T

T='T'
C must be upper case 'T'
CTRLZ = CHAR(26)
WRITE (*,1) CTRLZ,T
1 FORMAT (2A)
call inittu
call grafmo

WRITE (*,1) CTRLZ,T call textmo

GAMES

Adventurer's Corner

with Ed Mehrtens

The original "Adventure" program was written in Fortran for the PDP-11 minicomputer by Crowthers and Wood. It contained 130 rooms, 15 treasures, 40 useful objects, and 12 obstacles. The descriptions in the original version were very long and particularly witty, but it took up 200K of memory on a 16 bit machine. Obviously to fit this program into the Apple was going to take considerable editing. When it was rewritten for the Apple II the descriptions were drastically edited but the original dimensions were kept.

There are five companies producing different versions of "Adventure" for the Apple II: Microsoft, Adventure Inter-

national, Apple Inc, Programma, and Rainbow. I recommend the Microsoft version as being closest to the original, with the one by Adventure International as the second choice. Both are written entirely in machine code, with the Adventure International game residing entirely in memory and subsequently further edited. All versions are in text, as was the original.

No adventurer should be without at least one copy of this classic game, and true adventure addicts will have more than one version, and savour the differences.

"Adventure" is a true classic. I strongly recommend it as an extremely

entertaining game. As with all such games you should map your progress, as there are two difficult mazes. (See my last column on mapping.)

CRYPTIC CLUES FOR "ADVENTURE"

- 1) Moving by magic is fast and easy.
- Getting rid of the snake appears bird-brained.
- Kung Fu or Karate deals with one monster.
- 4) The plants are saying something.
- At the Troll Bridge (pay Troll) bear in mind that it doesn't have to be a treasure

Continued on Page 29

Ask! — and it shall be revealed unto you

by Gareth Powell

n many ways the microcomputer has been a machine searching for its destiny. At home an Apple II is too good a machine to use just for games, in business it is still suffering from the image of not being a "real computer". But this image is changing. This change has been brought about by software — well-written, well-conceived, well-executed software.

Not that there has been a flood of software of that quality. Out of the tens of thousands of programs that have been written for the Apple, only a select few — Visicalc, Zardax, and dBase II among them — have any claims to be truly great and to widen the scope of the Apple microcomputer.

Now comes another program, "Ask!", (Accounting Scenario Key) which I truly believe has made the Apple an essential working tool for the small businessman. It is a totally revolutionary product and it is also, I am pleased to say, Australian.

To understand the impact that this program can make, think first of the plight of the small businessman. I have been running small and medium sized businesses for nearly thirty years and I am therefore well qualified to speak on the subject.

Not a happy lot

A small businessman's lot is not a happy one. The only way he can normally manage to run his company is through management by crisis. His life consists of charging around putting out small fires, acting out a dozen roles a day, working all hours and then morosely staring into his glass of beer pondering on the gloominess of the future.

Despite the advertisements on television, the attitude of most banks towards him is antagonistic. They know they can make more money for less effort by servicing big accounts than by dealing with small ones in the hope they

will grow bigger. The amount of assistance given to small businesses by bank managers is not great. Most bank little managers have understanding of what makes business tick, which is why they are bank successful and not managers businessmen. And a bank manager has no intention of lending money unless there is collateral covering the loan by a safety margin of many hundred per cent

At the same time the small businessman finds that his suppliers keep the big discounts, the special service, and the better products for their major customers. And the small businessman finds that his customers — knowing that each client is important to the future of the company — start to act like prima donnas. And the small businessman has to put up with it.

At the end of the financial year he gets his accounts together before the onslaught of the tax inspector and other statutory sacrifices demanded by the government. His accounts are brought up to date and if he has made a large profit he arranges to lease a better car. If he has just scraped through, he thanks the Lord for small mercies. And if he has made a loss he takes a Valium sandwich and hurls himself back into the fray.

Ask ASK

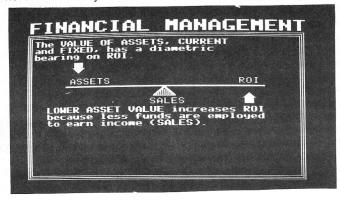
He has no time to study where his

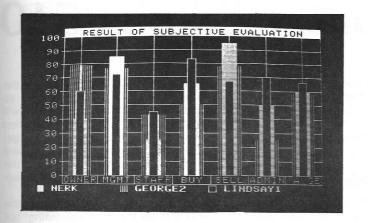
business is going, its strengths, its weaknesses. He is too busy surviving.

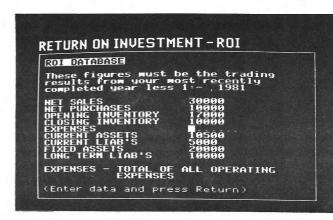
This is where "Ask!" comes in. Taking those accountancy figures that by law must be prepared, it looks at the general health of the business, it suggests remedies and looks at new directions. And it does it so cunningly and so elegantly that you are positively carried forward from one section of the program to the next as time after time the program analyses a specific business problem - and suggests a solution. There are three double-sided disks, and right from the beginning the program establishes a comfortable feeling of rapport with the user. It does not condemn, it suggests solutions. At the same time as it analyses the company it also teaches a true appreciation of accountancy as it applies to small businesses.

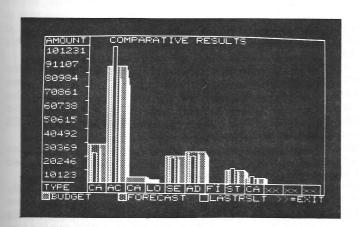
In my time I have been exposed to all types of business courses and all types of business books. A business education junky am I. But I have never found anything remotely approaching the intelligence, clarity and, yes, compassion of this program. At something under \$300 it is truly one of the great business bargains.

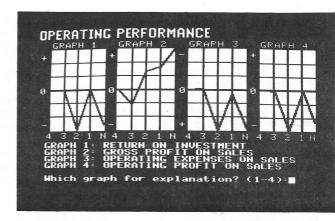
The program comes from a company called 6S Business Advisory of Geelong in Victoria, run by Andrew Clarkson. When Mr. Clarkson gets his first Rolls Royce, as he most certainly will, I trust that he will drive it to Sydney and throw me a few cigars.

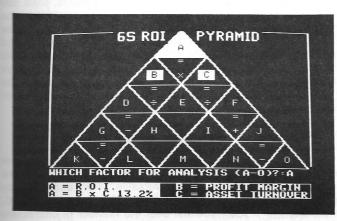


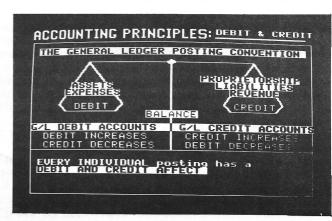












Printer Utility for the C.Itoh 8510

by Jim Dorrington

he C.Itoh 8510 dot matrix printer is one of the most popular printers for the Apple, despite the shortcomings of the instruction manual. Although this article is about that printer, a great deal of what I have to say will apply to most other models.

Let me start by saying that I am very pleased with my C.Itoh, especially as it cost under \$700 (that does not include the Apple parallel interface card). It is capable of a wide variety of print

features, as you will see.

The listing accompanying this article is designed to get your printer up and working. Once you have done this and experimented a bit you will want to try out the other abilities of your machine. To aid you in this respect, I include a list of functions with their respective Applesoft commands.

However I am jumping the gun a bit. The creation of this program and the list of instructions are the result of two weeks of evening work, deciphering the manual that comes with the printer. I could have purchased software to run the printer, but you will never get the most out of your investment unless you thoroughly understand how it works. Protected software certainly won't help you in this direction.

Poor manual

The manual was comprehensive but did not make for easy reading. Firstly, it was written in that stilted style of English that the Japanese favour. Secondly, the printer has been designed to work with most micros and, as such, the instructions were not specific to the Apple and therefore required some interpretation. However, after battling for a few hours, I discovered that plugging it in at the wall made the job a

I will now try to explain how my program works, after which I will include the list of instructions that will make your printer do such exotic things as print graphic characters and generate reverse line feed, ie, scroll in the opposite direction.

The most difficult problem that I encountered was the section that dealt with the Electronic Vertical Format Unit

(EVFU). This section, for the uninitiated, tells the printer the size of the printout page and that it should not print over the perforation.

"Why worry about the EVFU?" you may well ask.

Vertical formatting

Dot matrix printers are very intricate pieces of equipment. The print head is the most expensive component so it makes sense to look after it. The printout paper that I use is supplied with holes punched near the perforated lines - for filing purposes I suppose. Now, if the print head travels over one of these holes, it can strike the platen instead of the paper. Not only does this damage the delicate wires in the head, but unprinted data is lost.

On older model printers you will find a Vertical Format Unit tape. This provides a mechanical means to format your pages. However, this new EFVU is a much more powerful facility, enabling you to arrange your print in a multiplicity of ways. I will not go into the finer details in this article, but will provide you with a working program which will format a 194mm page (single or double spacing) at three or four millimetre line spacings. In addition, it will give you a choice of Pica or Compressed print modes.

The program

Lines 10 to 100 of my program analyse your response to the menu, with an error trap at line 70. The menu is located between lines 200 and 290. Your response sends the program to a subroutine between lines 130 and 160. These lines set up the parameters which will be used in the construction section located between lines 310 and 390.

The latter section is the real meat of this utility and will require greater elucidation.

The printer needs to be prepared for receiving EVFU data. This is achieved by feeding it the right hand square bracket. This character is not available on the Apple II keyboard (though it is on the //e), so it was necessary to create the B\$ string, representing the ASCII value of this character.

The next piece of information that the printer requires is a pair of bytes so constructed that the printer will recognise them as an instruction indicating that this is the top of the page. These bytes also happen to represent the @ and A characters, enabling the construction of a C\$ string in a similar fashion to that above.

The third stage in developing the FVFU is really the most interesting, but I have kept it as simple as possible. The printer is now ready to accept information about the format of every line on the page. This means that five different vertical tab settings are possible for each line. However, since I have not used this facility, I was able to condense this section into the loop at lines 330 and 340, adding this information onto the C\$ string.

The fourth section is similar to the top of form section above, but in this case informs the printer that it has now reached the bottom of the page. This information is also added onto the C\$

The fifth, sixth and seventh sections are also similar to sections described above.

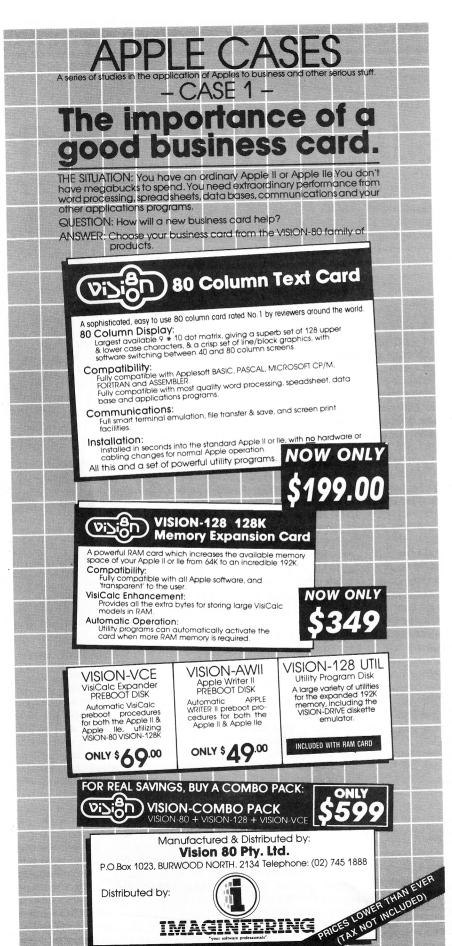
The rest of the utility is pretty straightforward. The strings concatenated at line 400 under the E\$ variable, the printer is then switched on at 405 and all of the above information, so painstakingly assembled, is sent to the printer in line 410.

Once the program ends, the printer switches off. Thus, if you want to print the listings of your programs, lines 500 and 510 tell you how to switch the printer on in the direct mode. These lines are not necessary if you intend going onto a program that has an inbuilt print routine. Your EVFU table stays resident in your printer and will be altered only if you rerun this program or switch the printer off completely.

Modifications

There are numerous modifications that you can make to this utility to make it more versatile. For example, by altering variable P\$ in lines 500 or 510, you will alter the number of characters being printed on each line. Or by

```
******
   REM
                         PRINTER UTILITY
  REM
   REM
                                         BY
                           JIM DORRINGTON
    REM
    REM
                  *******
     REM
      REM
                               DISTRIBUTION
         REM
10
      REM
 30 PRINT "WHAT FORMAT WILL YOU REQUIRE"
11
            GUSUB ZUU GET Z#:Z = UAL (Z#) GOTO 60: REM ERROR TRAP GET Z#:Z = VAL (Z#) GOTO 60: REM ERROR TRAP CHR# (81): GOTO 90 IF Z \langle 1 OR Z \rangle 9 THEN T# = CHR# (27) + CHR# (81): GOTO 90 IF Z = \rangle 5 AND Z = \langle 8 THEN T# = CHR# (27) + CHR#
 12
 40 PRINT "PLEASE CHOOSE A NUMBER"
  50
                                         COMPRESSED MODE
    80
            REM
                                                                                                    PICA MODE
    85 T$ = CHR$ (27) + CHR$ (78); REM
     90 ON Z GOSUB 130,140,150,160,130,140,150,160,600
        122 \text{MEM} = 57:L(2) = 9:A$ = .CHR$ (27) + CHR$ (66): RETURN : REM 130 L(1) = 57:L(2) = 6:A$ = .CHR$ (27) + .CHR$ (65): RETURN : REM 140 L(1) = 43:L(2) = 6:A$ = .CHR$ (27) + .CHR$ (67) : .CHR$ (67)
                 GOTO 310
     100
                                                                                                                                                                                1/6"
                                                                                                               CHR$ (84) + STR$ (36): RETURN :
      120
    KEM (1/8*2)^{\circ} CHR$ (27) + CHR$ (84) + STR$ (47): RETURN : 160 \text{ L}(1) = 21 \text{:L}(2) = 3 \text{:A}
                        REM (1/6*2)
                       REM
                                               DISPLAY
           170
                        PRINT "1"; CHR$ (93); PICA (59 LINES PER PAGE)"
           171
172
                        PRINT "2"; CHR$ (93); " PICA (45 LINES PER PAGE)"
                       POKE 32,7: VTAB 10
                                       4; LORE (73); FILM (40 LINES PER PAGE)"
"3"; CHR$ (93):" PICA (30 LINES PER PAGE)"
            200
                         PRINT "4"; CHR$ (93); PICA (23 LINES PER PAGE)
                          PRINT "4"; UHR# (YS); " PICA (23 LINES PER PAGE)"
PRINT "5"; CHR# (93); " COMPRESSED (59 LINES PER PAGE)"
PRINT "7" CURT (00); " COMPRESSED (50 LINES PER PAGE)"
             210
                         PRINT "5"; CHR$ (93);" COMPRESSED (37 LINES PER PAGE)"
PRINT "6"; CHR$ (93);" COMPRESSED (30 LINES PER PAGE)"
PRINT "7"; CHR$ (93);" COMPRESSED (30 LINES PER PAGE)"
             220
              230
                           PRINT "/"; LHK* (93);" CUMPRESSED (30 LINES PER PAGE)"
PRINT "8"; CHR* (93);" COMPRESSED (23 LINES PER PAGE)"
PRINT "8"; CHR* (93);" ADDIT"
              240
               250
                260
                           PRINT "9"; CHR# (93);" ABORT"
                270
                            POKE 32,0: PRINT : RETURN
                280
                 285
                 290
                                                      CONSTRUCTION
                                       CHR$ (29): REM PREPARE TO RECEIVE DATA
                             REM
                 299
                             REM
                   310 D# - CHR# (47/: MEN CHR# (64): REM T.O.F. 320 C# = CHR# (65) + CHR# (64): REM T.O.F.
                  300
                    330 FOR I = 1 TO L(1): REM BODY
                     350 NEXT : CB = CB + CHR = (67) + CHR = (64): REM B.O.F. 360 FOR I = 1 TO L(2): REM GAP TWEEN FORMS
                    340 C$ = C$ + CHR$ (64) + CHR$ (64)
                      380 NEXT : C$ = C$ + CHR$ (65) + CHR$ (64): REM NEW T.O.F.
                     370 C# = C# + CHR# (64) + CHR# (64)
                      390 D# = CHR# (30): REM STOP RECEIVING DATA
                        400 E$ = T$ + A$ + B$ + C$ + D$; REM ASSEMBLE ABOVE STRINGS
                       397
                        398
                                     PR# U A THEN HOME : UTAB 10: HTAB 8: PRINT "ENTER PR#1 (RETURN) ?P$
                                     PRINT ES: REM EXECUTE
                                    PR# 1
                         405
                                     ":P# = UHR# (Y) + "BUN": END
HOME: UTAB 10: HTAB 8: PRINT "ENTER PR#1 (RETURN) PP#":P# =
                         410
                          420
                          500
                                        ) + "132N": END
                           510
                                     END
                            600
                                                                                                                                           PROGRAM LISTING
```



PRINTED PAGES

altering variable "L(1)" at lines 130-160, you will effectively increase the number of lines being printed on each page. That means that if your printout pages are not 194mm long as were mine, then this alteration will adapt the printer to your paper.

I will now give you a list of Apple formatted printer instructions that will help you get the most out of your printer.

A little explanation at this stage might be useful.

STRING **FUNCTION** B\$ = CHR\$(33)Bold print on B1\$ = CHR\$(34)Bold print off Compressed print mode C\$ = CHR\$(81)D\$ = CHR\$(60)Bi-directional print mode D1\$ = CHR\$(62)Uni-directional print mode E\$ = CHR\$(69) Elite print mode F\$ = CHR\$(102)Forward line feed G\$ = CHR\$(35)Graphic Symbols I\$ = CHR\$(91)Incremental print mode on 1\$ = CHR\$(93)Incremental print mode off L\$ = CHR\$(76) + STR\$ Left margin set (0) + STR\$(..) P\$ = CHR\$(80)Proportional print mode P1\$ = CHR\$(78) Pica print mode R\$ = CHR\$(114)Reverse line feed U\$ = CHR\$(88)Underline on U1\$ = CHR\$(89)Underline off L4\$ = CHR\$(65)Four mm line separator L8\$ = CHR\$(66)Three mm line separator L0\$ = CHR\$(84)

PREFIX STATEMENT

0-99 units line separator

A\$ = CHR\$(27)

+ STR\$(..)

The above table can be used in either direct or indirect modes. The only thing to remember is that the A\$ string must always precede whatever instruction you have chosen. For example, should you wish to list your programs in the compressed modes, you would instruct the printer as follows:

PR#1 PRINT CHR\$(27) + CHR\$(81) LIST

As you will see, I have combined the A\$ and C\$ strings.

Where I have mentioned STR\$ in the table, you must fill in the desired decimal settings.

One last suggestion I would like to make is that when writing a program that will be using some of the above facilities, you will find it much easier if you define all your print strings at the beginning of the program or at least group them together. This will make debugging a lot easier.

Protect Your Program From Prying Eyes

by Paul Venter

Ithough no protection device is foolproof, here is a simple and effective way to protect your program from easy access by people you don't want to see it.

A deferred DOS command which destroys the listing of a BASIC program in memory is "CTRL-D" followed by "FP". When FP is embedded in a program in an area which is not accessed by the running of the program, there would not normally be any noticeable effect.

Such "protected" areas would be, for instance:

10 REM FP or 10 IF A > 77 THEN B = 0:FP

(where the value of the variable A never exceeds 77 in the program).

LISTing such a program can have two effects: either the program is bombed,

or nothing happens.

Whether the program is bombed or not by LISTing it depends critically on (RETURN) whether a immediately precedes the FP. When the lines of a program are ordered prior to listing on the screen, a (RETURN) character is automatically generated after about 30 characters, unless this has been altered by a POKE to location 33. This enables a new line to be started. With a bit of trial and error this cutoff point is fairly easily determined and the FP should then immediately follow that. This works, but is tedious to implement. Far more efficient is the deliberate inclusion of a (RETURN) character just before the FP as this will force a bombing of the LISTing.

"STOP!" the beginner will cry. "How on earth does one insert a (RETURN) before the FP, all on one line?"

Let's work through an example, step by step.

Firstly type NEW to clear memory of any BASIC program.

Next type 10 REM FP (don't forget to CTRL-D over the "F").

Now LIST the line if you like. It should

show as:

10 REM FP

Nothing unusual so far. Now enter the monitor by typing CALL-151 (RETURN). Now type 800.80E (RETURN) and you should see something like this:

0800-00 0D 08 0A 00 B2 20 20 0808-20 04 46 50 00 00 00

This represents the listing of your oneline program.

- 0D and 08 are low and high byte pointers to the end of the program.
- 0A and 00 are the low and high bytes of the line number "10"
- B2 is the token code for "REM" (each Applesoft command has its own token value)
- 20 20 20 represent three spaces.
- 04 is the ASC11 code for CTRL-D.
- 46 is the ASC11 code for "F".
- 50 is the ASC11 code for "P".
- 00 00 00 signifies the end of the program.

Now we are ready to insert the hex symbol for a (RETURN) character, which is 0D, into the program. Let's use the position of that last blank space at \$808.

Type 808:0D (RETURN)

Since we haven't altered the length of the program, it is unnecessary to adjust the pointers 0D and 08 showing the end of the program.

Now return to BASIC by typing CTRL-C (RETURN)

DO NOT ATTEMPT TO LIST THE PROGRAM AT THIS STAGE!!!!

Now type in a simple addition to your program, eg

20 PRINT "GOLLY" 30 PRINT "GEE WHIZ!"

If you want to save this little program, now is the time to do so. Now RUN the program. Nothing earth-shaking happens. It is not supposed to. Try

LISTing the program. You should see:

10 REM

LIST it again.

Nothing. The (RETURN), CTRL-D, and FP have done their dirty work.

Lines such as the above can be embedded in your program at various points to discourage casual inspection. However, always remember that no protection device is foolproof and that any safeguard can be broken given sufficient time and ingenuity (provided you're not doing it for monetary gain!).



From Page 23

- 6) You were told it was delicate.
- 7) A hungry animal is an angry animal.
- 8) Some objects frighten some animals.
- 9) How are you going to carry it?
- 10) Not only dogs need to be on a leash.
- 11) Neptune would be able to open it.
- 12) "Fee Fie Foo Foo"?
- 13) Was it a "Twisty Little Maze".
- 14) Ordinary coins are hardly "Treasure".
- 15) Do you have the foggiest idea where the diamonds are located?
- 16) Rust is a normal problem.
- 17) Keys imply a lock.
- 18) How would a magician use a wand?
- 19) You can take it as read, that the final point (350) will drive you to your wits' end.
- 20) Getting more water is the pits.
- 21) Some objects can't be with others.
- 22) Of course there are secret passages.
- 23) Magic works in quite a few places.
- 24) If it is described as dark, it is dark compared with what?

Apple Books

The Australian Apple Review, in association with Harker's Bookshop, announces the availability of dozens of books specific to Apple computers.

These hard-to-get books are available at their recommended retail prices (plus freight) through our international ordering service.



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TOTAL

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- Apple FORTRAN: Detailed language instructions A189. specifically for the Apple computer. (Blackwood) \$23.95
- Computer Literacy: Programming, problem A786. solving, and projects on the Apple. (Jones) \$25
- Computer Literacy: A hands-on approach. (Luehrmann, Peckman) \$24.95
- A682. Hardware Interfacing with the Apple II plus. (Uffenbeck) \$23.50
- Enhancing your Apple II. (Lancaster) \$25.50 A276.
- The Academic Apple. (Mowe) \$17.50 A419.
- The Apple Connection: An introduction to the A017. techniques and principles of Apple computer interfacing. (Coffron) \$25.95
- Apple Machine Language. (Rosen) \$28.95 A924. Discovering Apple LOGO. (Thornburg) \$16.95 A288.
- BASIC for the Apple II. (Brown, Finkel, Albrecht) A520. \$22.20
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- Mostly BASIC: Applications for your Apple II, A843. Book 2. (Berenbon) \$20.75
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- A295. The Penguin Book of Apple Games. (Hartnell)
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Apples in South Africa

Graeme Philipson recently visited South Africa, where he had an opportunity to meet Apple dealers and Apple owners.

outh Africa. The name conjures up many images: elephants and diamonds and apartheid. It's not the sort of place that you would immediately associate with computers, but the Republic of South Africa is one of the world's major computer markets.

On my first day in South Africa I picked up a Johannesburg Sunday newspaper. There on the front page, right at the top, was a small ad for Apple, the familiar rainbow in fruit that has become (after Coca-Cola) the world's most successful corporate symbol. It was virtually the first thing I saw in print in South Africa.

There are about four thousand Apple II's (including //e's) in the country, enough to support a local Apple computer magazine, called "Apple Source". There is also the usual smattering of Apple ///s, which have had about the same success there as they have in this country. South Africa has not seen Lisa yet, but it should be released there before Christmas.

In many ways, the South African market for Apple computers resembles that in Australia about two years ago: there is about the same level of experience and expertise. Apple Inc have no corporate presence in the Republic, their machines are distributed through a company called Base2 (as in dBase II), which has a similar arrangement to that enjoyed in Australia by Electronic Concepts until May 1983. Base2 licence dealers and distribute equipment, and a brand band of privateers, miscellaneous entrepreneurs import dealers, and peripherals and software from the infinite number of suppliers which seem to exist nowadays.

Australian exports

Two Australian companies, Vision-80 and Computer Solutions, are exporting their products to South Africa. Computer Solutions, who are responsible for the

"Zardax" word processing program (reviewed in our previous issue), distribute their software through a company in Durban also called Computer Solutions. It is just coincidence that the names are the same.

Computer Solutions (the South African one) is headed by Mike Baum, an Englishman in his early forties who migrated to South Africa fifteen years ago. (An interesting fact for those of you who think South Africa is going down the gurgle is that the country still has a nett white migration GAIN each year of some 15,000 people.) Mike runs his shop from a second floor office and showroom in a large arcade in the heart of downtown Durban.

Durban is a bustling tropical metropolis, South Africa's largest port and second largest city. Its population of nearly a million and a half people comprise mostly ethnic Indians, descendants of indentured labourers brought to South Africa to work the canefields of Natal in the last century. I met Mike Baum at the end of a hot and sticky day, a day in which Durban had received its first decent rainfall for months.



One-man operations

Mike was happy to talk about Apples in his country and mine. He had never

met his Australian counterpart, but assured me that Zardax is selling well in South Africa, and is as popular there as it is here. I had a list of South African Apple dealers with me, only a year of and with about a hundred names. He looked through it, crossing a lot of the names off as he went. "He's gone. He's finished. No. No." It seems that most of the names on the list were one-maoperations who had a side-business which they couldn't continue to support There are a few large dealers in the big cities, but not the great number of full equipped dealers there are in this country.

The cost of the Apple //e is about the same in both countries. The South African Rand is worth just a little more than the Australian dollar, and the quoted retail prices were identical: one for one, Rand for dollar. The cost of software and non-Apple peripherals is about 25% higher, reflecting the smaller volumes of these products.

Racial inequality

As you would expect in a country of such financial and racial inequality practically all computers Mike has sold have been to whites. A few Indians have bought machines, mostly for business and a single black man bought a computer recently — a Sinclair. Most blacks just can't afford something like a complete Apple system. The story was much the same in other places I visited.

The South African "Apple Source" magazine is very good for one supported by such a small user base. It is similar in size to the previous issue of this magazine, and consists chiefly of reader's contributions. It carries a good level of advertising, symptomatic of a healthy and growing South African Apple industry. And you can tell it's healthy because the fakes have moved in, in small quantities and at a higher price than here.

I left the country with a much better understanding of all aspects of South African life. It was strange to walk into an Appple computer dealer, just like back home. The differences are many but so are the similarities.

Dealer's Dilemma To discount or not to discount?

by Tom Price

s anyone who has shopped around for Apples (or any other computers) recently well knows, discounting is rife in the microcomputer industry. It is always possible to get cheaper than the listed price, particularly if you are buying a full system. There are so many Apple dealers now, too many if you talk to some people, that price competition is an accepted fact in the market place.

Which is a good thing, right? Well, it ain't necessarily so. Very often it is the customer who loses out.

Why? Basically because a computer is something completely different in the retail world. It is not like a washing machine or a fridge or even a television set — it is a powerful and sophisticated electronic apparatus with more capabilities and complexities than any mere user is ever likely to fathom. It consists of a number of related parts, hardware and software, which must all match sufficiently for a complex job to be performed.

Because of this complexity, and because computer owners invariably add to their systems after they buy them, after sales service is of paramount importance in computer sales. But, and here is the problem, if a dealer makes only a small profit on a sale, he cannot afford the time to provide this service. And if he doesn't discount, he loses sales to the dealer who does.

Apple margins

Most Apple dealers today complain about the small margins they are making on Apple gear. One Sydney dealer openly admits (though not to Apple Australia) that he uses the Apple name just to get people in his shop, then uses his sales skills to guide a customer a different machine, one that is worth while to sell.

Let's look at an example. Only the rames have been changed. Aardvark Computer was a small operation, but creasing in size as loyal corporate and estitutional customers bought more

machines and loyal personal customers recommended Aardvark to their friends. The folks at Aardvark prided themselves on service to the customer. They always sold at the recommended retail price, but customers knew that if their disk drive blew up a technician would be out to fix it immediately, and that if they had a technical problem the head of Aardvark himself would sort it out if necessary.

That was back in the days before there was a computer store in every shopping centre. Soon more stores began to open, and one day a customer in Aardvark's shop was heard to say "But I can get it cheaper at Zebra Systems down the road." "What about service?" the nice folks at Aardvark asked. "Price is price," said the customer.

Angry Aardvark

The head of Aardvark was very angry. "Once somebody starts they'll all start," he shouted. And indeed, the writing was on the wall. The next week a customer entered the Aardvark shop and asked about a computer system. It was his first time in a computer store, and the folks at Aardvark showed him all the tricks, how the Apple could do this and how the Apple could do that. "Very good", said the prospective buyer, and left the shop to consider his purchase.

The next week an Aardvark salesman contacted this person to see what he had decided. "Too late," he said. "I bought my computer from Zebra Systems, they were \$100 cheaper." Two days later this same person rang up Aardvark with a technical problem. When told that he had bought the system from Zebra and not Aardvark, he said "But they don't know the answer, and you chaps were so helpful I was sure you would." Everybody at Aardvark promptly screamed.

Nowadays Aardvark sell computers for 10% or even 20% less than the full retail price. Zebra sell at 25% off. And the "price-conscious" customer had to pay \$200 to get someone to come and

sort out his technical problem. Aardvark and Zebra are going broke, and the customer is unhappy with both companies: Zebra for being unable to look after him and Aardvark for refusing to

Nobody wins

It's a very common story. Very few computer dealers are happy with it, and a lot of customers are a lot worse off. Resale price maintenance is of course illegal in Australia, which is as it should be, but what is the answer to the problem? There will always be shonky dealers and get-rich-quick merchants, just as there will always be honest people who believe that hard work and integrity are sufficient ingredients for economic success.

Many people mistakenly believe that computer dealers make a lot of money. The fact is that most of them are struggling to pay the wages at the end of the week and keep the cash coming in slightly ahead of the cash going out, and everything ahead of the bank manager. If dealers were making more money and customers were getting better service everybody would be better off. Bigger margins for dealers is part of the answer, but this shouldn't prejudice the customer who genuinely doesn't need any help, or who is prepared to pay for it if he needs it.

What dealers should do is say something like "If you pay cash here and now and walk out and never come back except to buy more stuff, you can have 20% off. If you want us to instal the system, 10% off. If you want us to hold your hand and come running when your machine doesn't work because you forgot to turn it on, you pay full price."

Buyer education is perhaps the best answer. The customer should know, or be told beforehand, the disadvantages inherent in buying a discounted machine. Customers should also appreciate, and expect, that if they pay full price for a computer system they will receive the service and support that such a price justifies.

THE WORM IN THE APPLE

he first issue of this magazine may have been full of interesting information but there was no doubt it was slim to the point of ridicule. It was the only magazine on the stands suffering from anorexia nervosa. The editor has explained to me that the paper was selected so that the machine could be printed on a four colour printing machine called a 16 page web rotary. That is what he tells me. Being of a suspicious and jaundiced nature, I wonder why he printed a magazine on a colour printing press when there was no colour inside the magazine at all. Perhaps he was hoping "Penthouse" centre spread.

Or perhaps he thought that he would reprint pages of colour graphics. Whatever the reason, it was one of those ideas which came off badly. Other worms have told me to the point of boredom that they liked the magazine but that it was very thin. And I agree with them. I am assured by the editor (who is still in a defensive and defiant stance) that this issue will be a lot thicker. I should hope so — it could hardly be any thinner.

Typesetting

My Pommie cousin, Geoffrey Worm, writes to tell me that in the Old Dart Apples have spawned a brand new cottage industry. It seems that one of the brighter entrepreneurs has gone around issuing housewives with brand new Apples, into which they key book manuscripts using Wordstar — a word processing program of which I am not overly fond.

They are paid on output, and the base



production count is 2,500 words an hour with only three spelling errors. Not being strong on mathematics, I borrowed a calculator, and worked out that a typist hammering the keys at 60 words a minute should be able to produce 3,600 words an hour. Therefore the target set seems reasonable, allowing time for a cup of tea and a visit to the loo every hour. The disks when loaded with their text files are then processed through a typesetting machine, producing flawless typesetting with a minium of errors at a relatively low cost.

Geoffrey, that English worm, assures me that the printing unions do not complain as the operator of the typesetting machine is a union member, even if no one else is. Even more



interestingly, Geoffrey tells me that if the manuscript involves mathematical typesetting then it is not set in the UK but sent to India where the locals, who have a natural mathematical talent, set it with great care and dexterity and, so Geoffrey assures me, hardly ever ever make a mistake. How long is it before we see a similar system in Australia?

Perhaps never. For I have seen the underside of a machine coming from Wang sometime next year at about \$18,000 which will read typescripts of any variety and hurl them into a computer's memory — and the machine doesn't have to be a Wang. Indeed, there are several versions of this type of optical reader already on the market, but none I know that has the Wang's ability to read any type face. And yes, it could be fitted to an Apple, although at that price it would truly be the case of the tail wagging the dog. Undoubtedly, the prices will come tumbling down and the technology will improve. It will mean the end of a great deal of typing drudgery and will release large quantities of nubile young women to go and do something more useful — like

exposing themselves to the sun and this worm's lascivious eyes on Bondi Beach.

A loose screw

For those of you who have ever lost a screw from the underside of their Apple, the following story will have a familiar ring. This worm's specially modified Apple had a screw loose and eventually, as happens, the screw disappeared. Simple, thought I, to obtain a replacement. Not so. Impossible. The screw seems to be of a thread and size unknown to mortal man (or to Traversi Jones, Paul's, Nock and Kirby and so on and so on).

While in the workshop of a wellknown Apple dealer, I asked where they obtained replacement screws. From other machines, I was told with a straight face. I know there is a moral in this somewhere — but I can't make out precisely what it is.

Colour blind

What colour is an Apple? I have just been comparing an early Apple with the latest Apple //e and either my eyes are getting old and weary (always a possibility) or the Apples are getting darker as they get younger. My Apple is an Irish Apple and can therefore be excused if its complexion is not the same as other Apples. But if you look at a range of machines which have come from Cupertino you will notice that they move from an almost white shade to a dark tan. The theory occurs to me that they are left in the sun for curing after manufacture and that some pick up a better tan than others. Which is not likely. But the discrepancy exists and I have never heard it explained away.

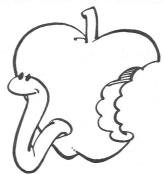
Off focus

There is a splendid magazine published in America by one Wayne Greene called "In Cider". It is full of information and enough advertising to make the publisher of this magazine Greene with envy. In the current issue the lead editorial is about Jaguar cars, the way they are built, their road holding, their cost. What this has to do with Apples totally escapes me. It truly does read as though the publisher is off on an ego trip. And we all know magazine publishers never do that.

Cigarettes and wild, wild women

The publisher of this magazine has made it a firm rule that no one can smoke cigarettes (nor pipes, nor cigars nor other noxious substances which are known to stunt your growth) on the premises. The reason is not, apparently, that this is a vile, pernicious and antisocial habit, but that cigarette smoke ruins diskettes. I might have found this difficult to believe except for the fact that disk crashes were the order of the day until this edict was brought into effect. Since then they have diminished to the extent that they are now unheard of. I have been told that cigarette smoke contains microscopic morsels which adhere to the surface of disks and play havoc with the information they contain. I was told this by a disk manufacturer and I believe him. Soon we will have a new generation of disks on which the

information will be crammed into even tighter spaces. Nashua are making the iron oxide particles on their discs stand vertically to attention so that more information can be crammed in at ever closer tolerances. With these discs

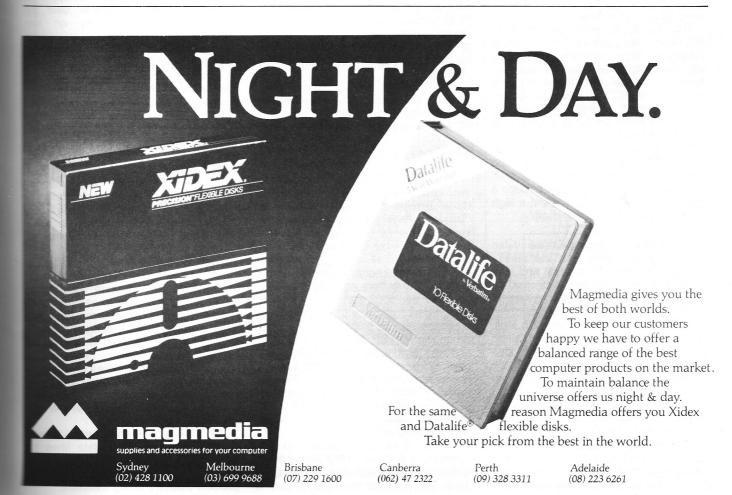


smoking will be a disaster. If you smoke cigarettes and you do a lot of work with your Apple it would be interesting to know whether you too suffer a disproportionate number of crashes.

Perhaps you could let me know.

It's your shout

My Welsh cousin, Taffy Worm, has met a publican who has written a program to control a pub. As the drinks are rung up on the till, the amount is shown on a VDU which is well within the landlord's eagle eye. Which means that there is, in theory, no till fiddling possible. The following fact is, as yet, unkown to the research team at Apple in Cupertino but I can tell them that an Apple //e does not work satisfactorily after a pint of warm, wet Rhymney bitter beer has been poured into it by an irate bar attendant who has found that a secondary source of income has been severely curtailed. The landlord is now waiting for Apple to announce a beer proof machine when he will re-introduce the system. He should not hold his breath.



Part 2 — an overview of the Apple II's hardware.

by Felix Macri

pple Computer Inc manufactures the Apple II, Apple II plus, Apple 1/e, Apple /// and Lisa microcomputer systems, and various support peripheral devices. We will discuss only

the Apple II range.

The Apple II and Apple II plus are virtually identical machines. The one minor difference is that they have different flavour system software in their ROM. Apple Computer Inc will no longer be shipping the Apple II and Apple II plus and will concentrate on the Apple //e with extended features. The descriptions that follow refer to the Apple II plus - 11 and Apple microcomputers. The Apple //e will be covered at a later date.

The Apple II is a self-contained microcomputer system with video display terminal capabilities, based on the 6502 microprocessor. Its standard features include 48K bytes of main memory (RAM), 12K bytes of system program (ROM) organised in blocks of 2K bytes. Of this, 2K bytes are taken up by the system control (monitor), and 10K bytes are taken up by the Applesoft BASIC. It has provision for 8 expansion slots, cassette interface, typewriter style ASCII keyboard, audio output through a speaker, games I/O socket, and a high efficiency switching power supply.

The Apple II supports three video modes: monochrome text; low resolution graphics with 15 colours; and high resolution graphics with six colours.

The Apple II hardware consists of three essential modules. They are:

- 1. Main Logic Board. The main logic board of the Apple II is a self-contained single board microcomputer and a video display terminal. The Apple II is capable of displaying text or graphics through an external video monitor.
- 2. Power Supply. This module is capable of providing all of the power requirements of the system.
- 3. Keyboard. The keyboard generates seven parallel bits of information plus a strobe signal. This allows programs and data to be entered into the machine.

The main logic board

The main logic board is the core of the Apple II. It contains the RAM, which is shared by the video display and the microprocessor. The 6502 microprocessor generates a 16 bit address on the System Address Bus and one control signal on the R/W line. The address generated by the 6502 points to the memory or I/O location wanted and the R/W line controls the data direction over the 8 bit Data Bus.

The video circuits also generate an address to the RAM. The accesses to RAM by the video circuits are "memory reads" which cause the data to be sent to the video generator section for display as either text or graphics. The video generator adds synchronisation ("sync") pulses and a colour burst signal to the video data so as to produce a composite video signal output at the RCA-type video jack.

MPU and system bus

Signals to and from the 6502 microprocessor can be divided into three groups of related signals or "buses". They are isolated from the

system buses by bus drivers.

- 1. The Address Bus: these lines are buffered by 8T97 or 74LS367 buffer chips located at board locations H3, H4 and H5. The buffers are at this location because the 6502 cannot power both the on-board chips and any peripheral cards that may be plugged into the slots. When the PHASE ZERO clock is high, or "true", or when the PHASE ONE clock is low, or "false", a valid address is available on the address bus. For this reason PHASE ZERO is used as a highgoing enable, and PHASE ONE as a low-going enable by chips which use the address lines as inputs.
- 2. The Data Bus: these lines are buffered by 8T28 or 8304B bidirectional buffer chips located at board location H10 and H11 (for the 8T28s) and at

location H10 (for the 8304B). These integrated circuits amplify the signals on the data lines.

3.The Control Bus: comprises six signals which are used to control microprocessor actions. Signals RES, IRQ, NMI and RDY connect directly to the microprocessor, while R/W is buffered by one of the 8T97 or 74LS367 gates and DMA controls the address buffers' tristate inputs.

Signal RES is used to reset or start the microprocessor from a power down condition. The signal is generated on the motherboard at location A13 by using a NE555 timer (at power up) or at the whim of the computer user by pressing the RESET key on the

keyboard.

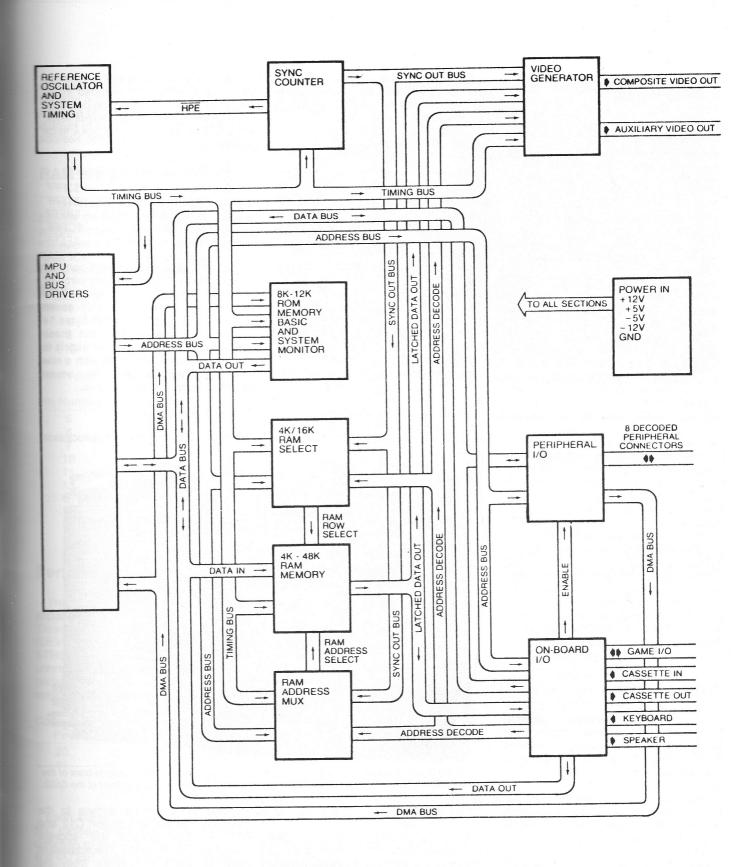
Signal IRQ is used to inform the microprocessor that an interrupt request is required. Program control can be transferred to another memory location determined by two memory vectors at locations hex FFFE and FFFF, if the interrupt mask flag is not set. If the interrupt mask flag is set, the interrupt request is disallowed and normal processing will occur.

Signal NMI is an unconditional interrupt. The current instruction is completed and program control is transferred to another memory location determined by two memory vectors at locations hex FFFA and FFFB.

Signal RDY allows the user to stop the microprocessor on all cycles except write cycles. This feature allows low speed ROMs or RAMs to be interfaced into the system. The address lines will remain valid until RDY is again true.

The R/W signal is used to control the direction of data transfer between the processor and other devices on the data bus. A high level on R/W indicates data transfer to the processor while a low level on R/W indicates data transfer out of the processor.

The DMA signal when held low will cause the address and data lines to become high, allowing other devices to control the system buses, usually to perform memory or I/O transfers.



Reference oscillator and system timing

The reference oscillator is comprised of a differential amplifier made from discrete passive components, including a quartz crystal. The crystal has a fundamental resonance frequency of 14.31863 Mhz (USA) or 14.25045 Mhz (Euro). A variety of timing signals are generated from the master oscillator by the system timing circuits.

The signal 7M is a 7 Mhz general purpose timing signal used mainly in the

HIRES section.

The signal COLOR REF is a 3.58 Mhz signal used by American NTSC television receivers as a phase reference for colour information.

The signals PHASE ZERO and PHASE ONE are used to determine if the microprocssor or the video circuitry has access to the memory. These signals also enable the peripheral I/O circuits which use the 6502 buses. PHASE ZERO drives the microprocessor's clock input. The maximum clock frequency is 1MHz (1 clock cycle = 1 microsecond), while the minimum clock frequency is 50KHz (1 clock cycle = 20 microseconds). The reason for this last figure is that the internal CPU registers must be refreshed, since they are MOS devices requiring a periodic refresh to avoid losing their electric charge.

The signals RAS- (row address strobe) and CAS- (column address strobe) are used to jam the "selected" address registers of the dynamic memories in two steps (multiplexing).

The AX signal (address multiplex) enables the RAM hardware to switch from row to column addresses.

Sync counters

The sync counters provide synchronisation and timing signals from a chain of counters located at positions D11 — D14. These counters generate signals H0 — H5, V0 — V4 and VA — VC.

The horizontal signals H0 — H5 determine the horizontal byte position on the screen, binary 00000 to binary 100111 (0 — 39).

The vertical signals V0 — V4 determine the vertical line position on the screen, binary 00000 to binary 10111 (0 — 23).

The other vertical signals VA - VC are the vertical scan line position within the vertical screen line, binary 000 to binary 111 (0 - 7).

ROM memory

The Apple II has 12K bytes of system programs stored on 2K byte ROMs. 10K bytes is taken up by the Applesoft extended BASIC while the remaining 2K bytes is taken up by the system monitor program. On a standard Apple II, memory locations \$E000 — \$FFFF contain ROM memory, with an optional ROM available for the \$D000 - \$D7FF memory space. On an Apple II plus system the entire \$D000 - \$FFFF memory space is taken up with ROM memory. Signal INH is provided on the bus to deselect the ROM memory. Two Apple products, the ROM card and the Language card, use this signal to bank switch the motherboard ROMs out of the circuit, so that ROM memory on the Apple ROM card or dynamic RAM on the Apple language card can be mapped into the same address space.

memory. The remaining 16K is taken up by 4K bytes of memory mapped input/ output and 12K bytes of on-board of ROM space. The top two address lines, A15 and A14, select the 16K block to be addressed:

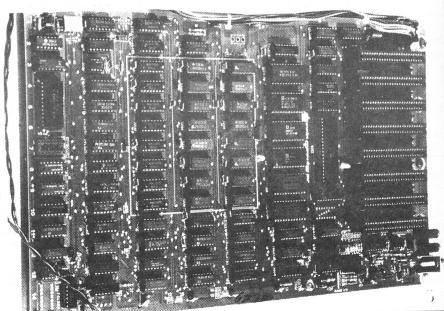
A15 A14 Selected Memory Block

0 0 Row C RAM \$0000 — \$3FFF 0 1 Row D RAM \$4000 — \$7FFF 1 0 Row E RAM \$8000 — \$BFFF 1 1 I/O Space \$C000 — \$CFFF ROM/Language Card \$D000 — \$FFFF

Each 16K byte block of RAM consists of eight 16K x 1 bit integrated circuits. The 16K ''4116'' type Dynamic RAM used in the Apple II has only seven address lines. To address 16K bytes 14 address lines are needed, but these devices have only 16 pins. The trick is to send down seven addresses with a row address signal followed by seven addresses with a column signal.

RAM Address Multiplexer

This circuit allows the microprocessor



The Apple II motherboard. The 6502 microprocessor is the long chip immediately in front of the expansion slots at the top of the board. The ROMs are the six largish chips in front of the 6502.

RAM select

With 16 address lines the 6502 microprocessor can directly address 64K bytes of memory. Random Access Memory is provided in three rows of 16K bytes for a total of 48K of on-board

and the video circuits access to the memory. The ICs at location C12 and E11 — E14 provide the address multiplexer for the RAM. The addresses input to these ICs come from the microprocessor and the video generator. The RAMs expect an

address to be presented to the RAM chips in two stages: a 7 bit row address followed by a 7 bit column address. The outputs of these ICs provide seven RAM address lines.

RAM memory

The RAMs and their data latches provide the means to store and retrieve programs and data. The RAM used in the Apple II is of type "4116" dynamic RAM ICs. On the four corners of each RAM, supply power is applied to the IC:

Pin Number	Function	Voltage
1	Vbb	- 5 V
8	Vdd	+12 V
9	Vcc	+ 5 V
16	Vss	0 V

Seven pins are used for addressing:

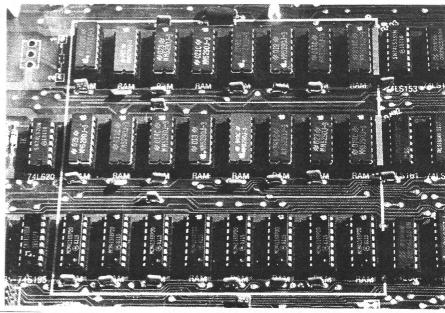
Pin Number	Function	
5	A5	
6	A4	
7	A3	
10	A0	
11	A1	
12	A2	
13	A6	

Peripheral I/O

The main logic board expansion via eight plug-in connectors. Three control signals, Device select DEV SEL), I/O select (I/O SEL) and I/O STROBE (I/O STRB) appear at each connector. These signals allow peripheral devices be easily controlled.

Connector Pin	Signal Mnemonic	Pronounced
20	I/O STRB	I/O Strobe
41	DEV SEL	Device
		Select
1	I/O SEL	I/O Select

Each signal is a low going pulse for 500 nanoseconds. Signal I/O STRB is common to all slots, while the DEV SEL and I/O SEL signals are slot dependent. Having the signals slot dependent eliminates the need to incorporate extra ardware on peripheral cards.



The Apple II's RAM chips.

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THE TOP TEN

This month's most popular Apple programs.

Entertainment

1. Flight Simulator

An oldy which has recently resurfaced. Brilliant use of hi-res graphics lets you pilot your own plane and engage in aerial combat.

2. Wizardry

The archetypal "Dungeons and Dragons" adventure game, complex yet simple to play. Comes with scenario 1, "The Maze of the Mad Overlord".

3. Zaxon

Pilot your aircraft through a three dimensional battlefield of enemy aircraft, guided missiles and anti-aircraft guns, with nerve-shattering sound effects.

4. Choplifter

Fly your chopper into the Bungeling Empire to rescue 64 hostages, avoiding interceptor jets, homing mines, and tanks. Challenging, realistic, playful.

5. Chess

The oldest game gets an update with a new computer version. The best yet, with 17 levels, advice on moves, postal and mate-finder modes. Makes previous Apple chess games obsolete.

6. Castle Wolfenstein

A novel adventure set in a "Colditz" type castle in WWII. Blow the Germans away!

7. Crime Waves

Lawlessness runs rampant in the Big City. Ride your blue cruiser and stop the baddies before their Robot Rammers reduce the town to chaos.

8. Bill Budge's Pinball Construction Set

From the daddy of Apple graphics

games comes a program which allows you to design your own pinball machine, and play it.

9. Zork I

One of the original and the best, a great adventure game.

10. Frogger

It's a long way home, Mr Frogger, but stay on your webbed toes and you'll make it. Cross that highway, hitch a ride across that river, watch that steep riverbank — and you're safe at last.

Home and Business

1. Bank Street Writer

A very good personal or home word processor, at the right price.

2. PFS programs

A series of data base management programs, suitable for personal or small business use.

3. Visicalc

The original spreadsheet program, and still the best for many people.

4. Zardax

Australia's own. The best all-round word processor for the Apple, for any application.

5. DB Master

A database program for professionals. A complex program, but extremely versatile.

6. Visiword

From the people who brought you Visicalc, a new word processor. Interfaces with other Visicorp programs more easily than any other word processor.

7. Home Accountant

Chequebook balancing and expense dissection for a home or a small business.

8. Visitrend/Visiplot

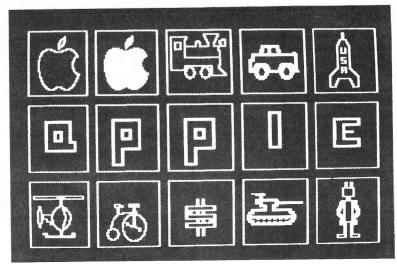
Plot your Visicalc data. Bar charts, pie graphs, scatter charts, histograms. Also has statistical package for data analysis.

9. Visiterm

Turn your Apple into a terminal. Up to Visicorp's usual high standard.

10. Apple IBM Connection

Transfer information from your Apple to your IBM PC, if you have both.



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- * Runs equally well on one drive and two drive systems.
- * Powerful formatting commands.
- * Allows incorporation of spreadsheet files.
- * Automatic "widow" and "orphan" suppression.
- * Extensive mail list capabilities, including sort.

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- * Easy merging and dissection of documents. Any document or any part of any document can be inserted into any place in any other document.
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